



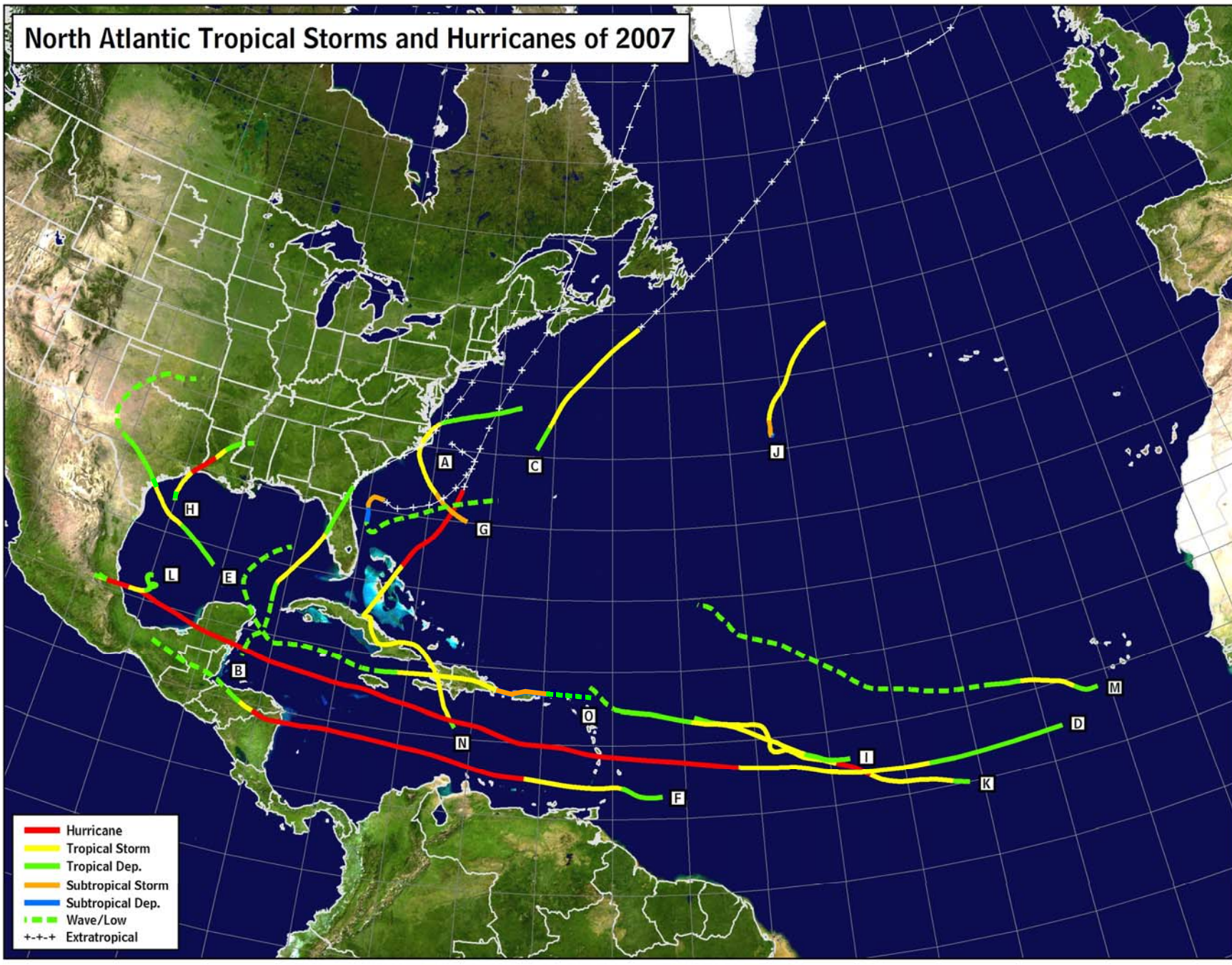
# **Overview of the 2007 Atlantic Hurricane Season**

**Max Mayfield  
WPLG-TV Hurricane Specialist  
and Former NHC Director**

**All Tropical Cyclone Graphics + Verification  
Provided by NHC Staff**



# North Atlantic Tropical Storms and Hurricanes of 2007



# 2007 ATLANTIC HURRICANE SEASON STATISTICS

NAME	DATES	MIN PRESS (MB)	MAX WINDS (MPH)	DIRECT DEATHS	U.S. DAMAGE (\$ million)
STS ANDREA	9-11 MAY	1001	60	0	minor
TS BARRY	1-2 JUN	997	60	0	minor
TS CHANTAL	31 JUL-1 AUG	994	50	0	0
H DEAN	13-23 AUG	905	175 (5)	32	0
TS ERIN	15-17 AUG	1003	40	9	minor
H FELIX	31 AUG-5 SEP	929	175 (5)	130	0
TS GABRIELLE	8-11 SEP	1004	60	0	minor
H HUMBERTO	12-14 SEP	985	90 (1)	1	50
TS INGRID	12-17 SEP	1002	45	0	0
TS JERRY	23-24 SEP	1003	40	0	0
H KAREN	25-29 SEP	988	75 (1)	0	0
H LORENZO	25-28 SEP	990	80 (1)	6	0
TS MELISSA	28-30 SEP	1005	40	0	0
H NOEL	28 OCT – 2 NOV	980	80 (1)	163	0
TS OLGA	11-12 DEC	1003	60	25	0

# 2007 Season Summary

- **Fifteen named storms, six of which became hurricanes, including two major hurricanes**
  - Similar to the long-term averages of 11, 6, and 2
  - Both major hurricanes reached category 5 status
  - Four of the named storms were subtropical for at least a part of their life
  - Eight tropical storms formed in September, tying the record set in 2002, but most of these were short-lived
  - Two other tropical depressions formed
- **The Accumulated Cyclone Energy (ACE) index for the season was about 84% of the long-term median**
  - Lowest ACE value since 2002, and third lowest in last 13 years (ahead of only 1997 and 2002)



# **2007 U.S. Impacts**

- **One hurricane, one tropical storm, and three tropical depressions made landfall in the United States**
- **Barry made landfall as a depression near Tampa Bay; associated tornadoes caused minimal damage in Florida**
- **Erin came ashore in Texas as a depression, but the cyclone and its remnants produced heavy rains and deadly floods in Texas, Oklahoma, and Missouri**
  - **At least 16 fatalities directly attributable to Erin and its remnants**
  - **Briefly produced sustained winds of gale force, and hurricane-force gusts, over Oklahoma**

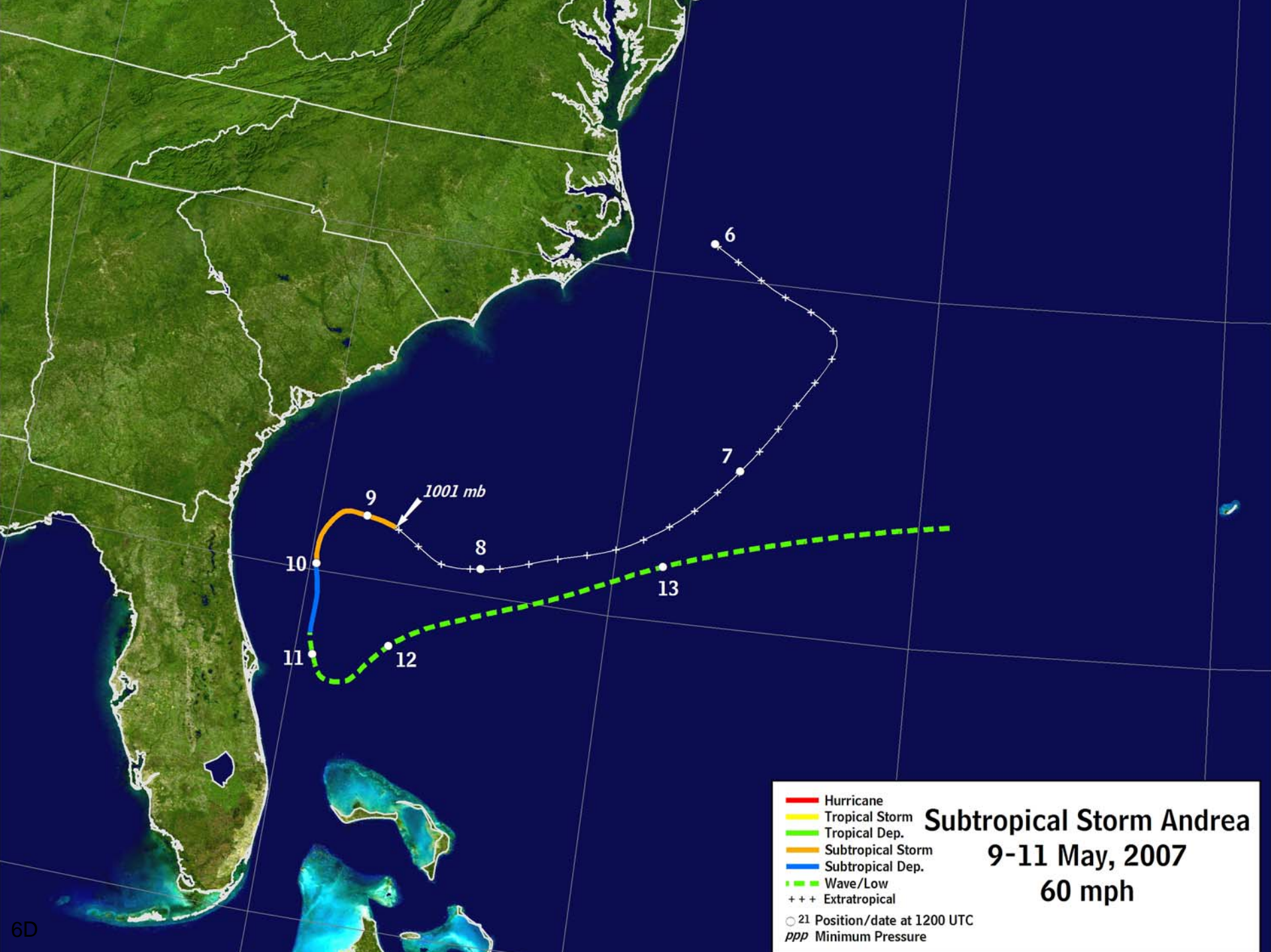
# **2007 U.S. Impacts**

- **Tropical Storm Gabrielle made landfall in eastern North Carolina, causing minimal damage**
- **Humberto struck southeastern Texas as a strong category 1 hurricane, causing one fatality and about \$50 million in damages**
- **Tropical Depression Ten made landfall along the Florida panhandle with minimal impacts**
- **Noel indirectly caused severe beach erosion along the Florida east coast; directly caused downed trees and power lines in the northeast U.S. as an extratropical cyclone**



# **2007 International Impacts**

- **Two category 5 hurricanes made landfall in the Caribbean**
  - **Dean (Yucatan Peninsula of Mexico)**
  - **Felix (northeastern Nicaragua)**
- **Dean responsible for at least 32 deaths across the Caribbean, mostly in Mexico and Haiti**
- **Felix caused about 130 deaths in Nicaragua and Honduras**
- **Lorenzo caused at least six deaths in Mexico, mostly due to floods**
- **Noel caused devastating floods in Hispaniola, eastern Cuba, Jamaica, and the Bahamas, resulting in at least 163 fatalities; also hit Canada as an extratropical cyclone**
- **Olga also caused devastating floods in Hispaniola, resulting in about 25 fatalities**



Hurricane

Tropical Storm

Tropical Dep.

Subtropical Storm

Subtropical Dep.

Wave/Low

+++

Extratropical

○ 21

Position/date at 1200 UTC

ppp

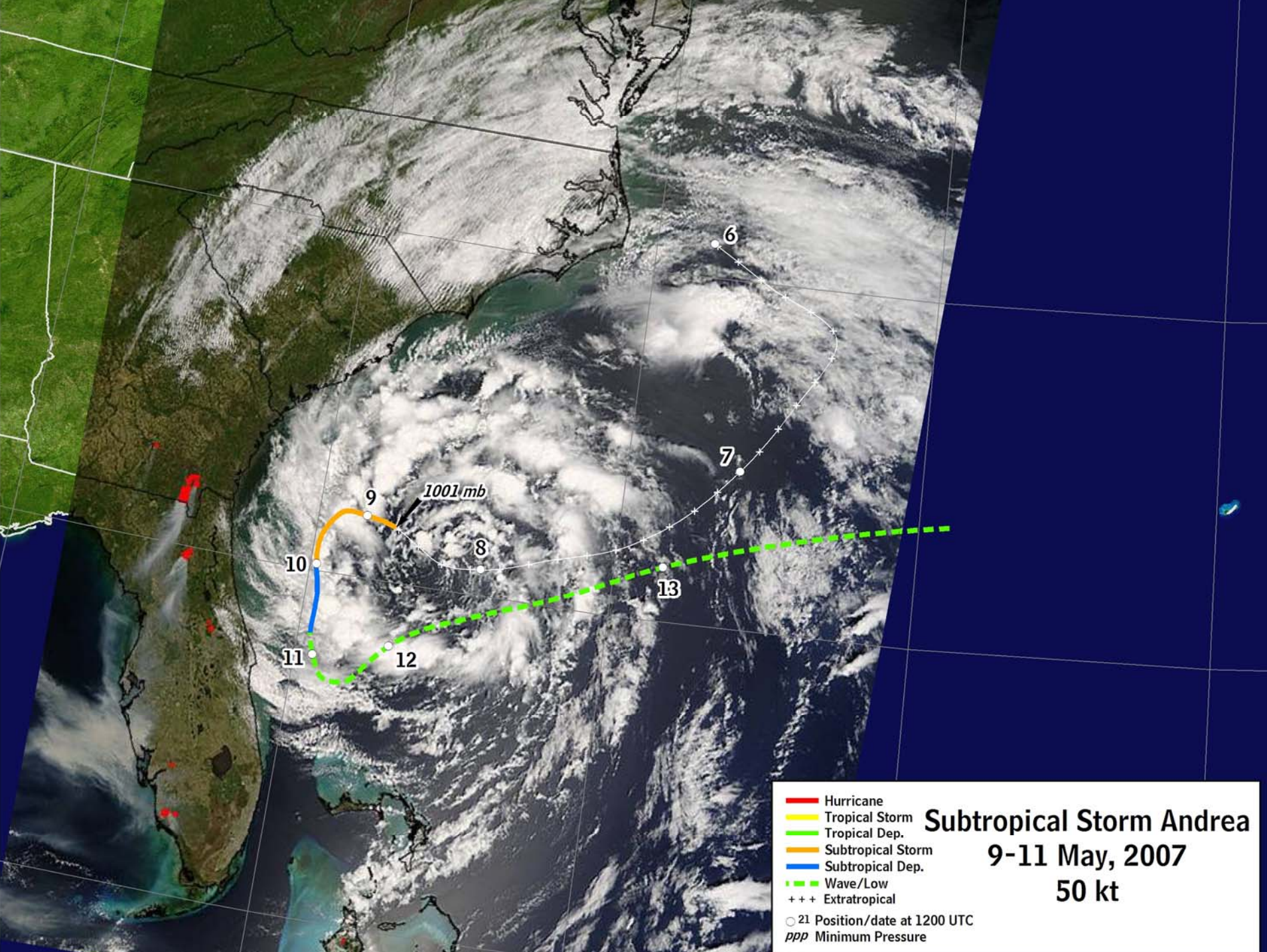
Minimum Pressure

Subtropical Storm Andrea

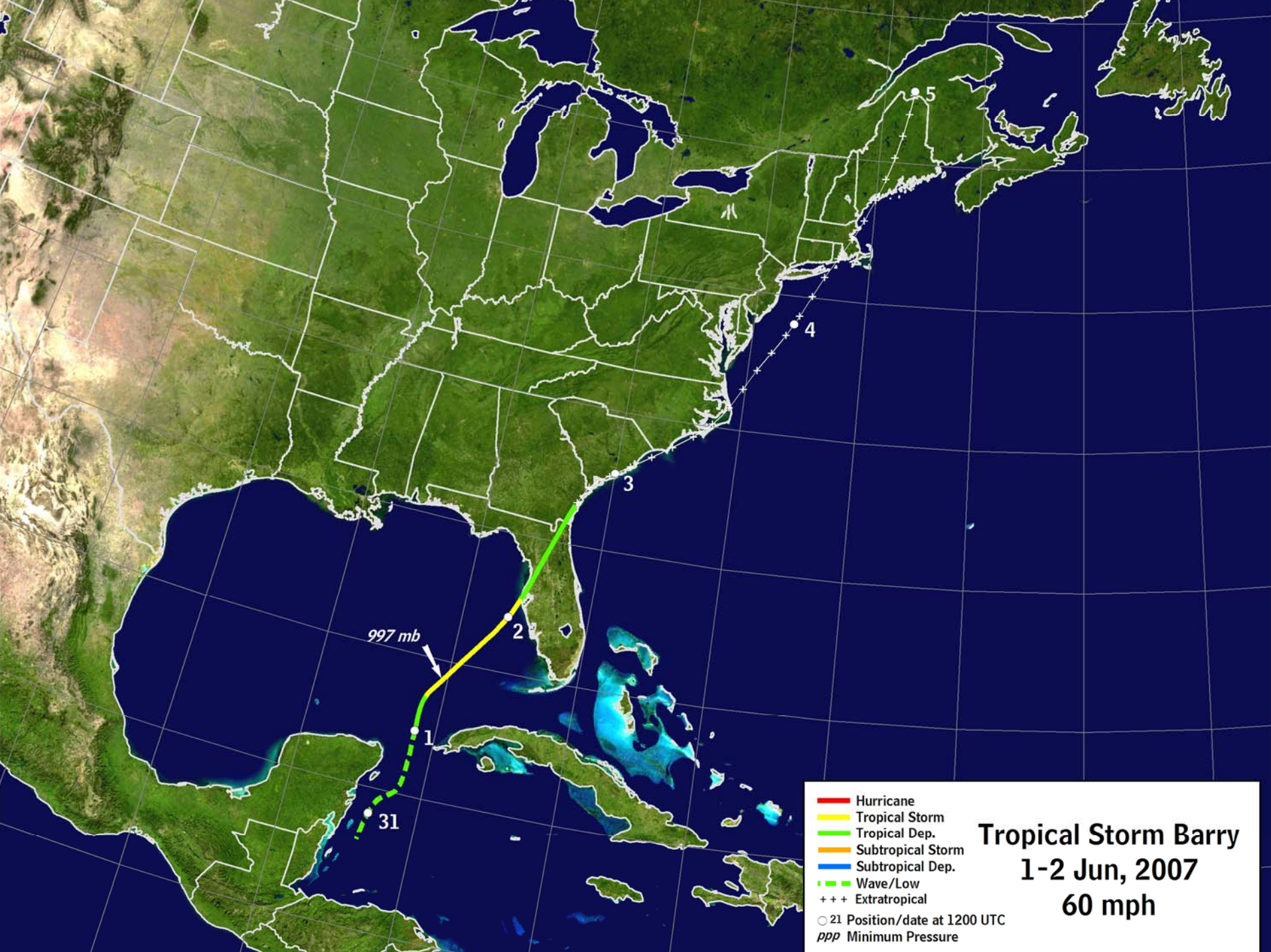
9-11 May, 2007

60 mph





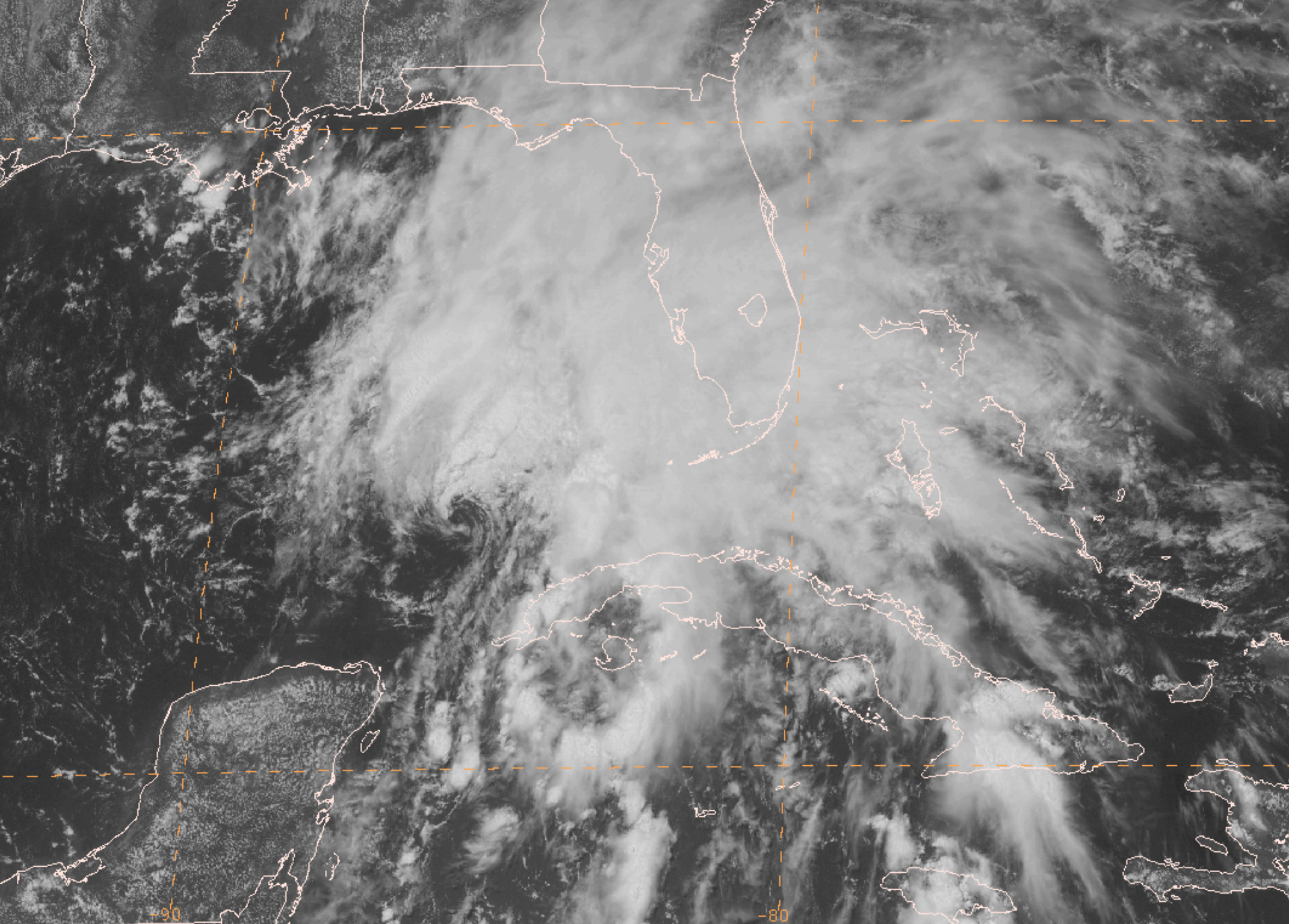




- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical
- 21 Position/date at 1200 UTC
- ppp Minimum Pressure

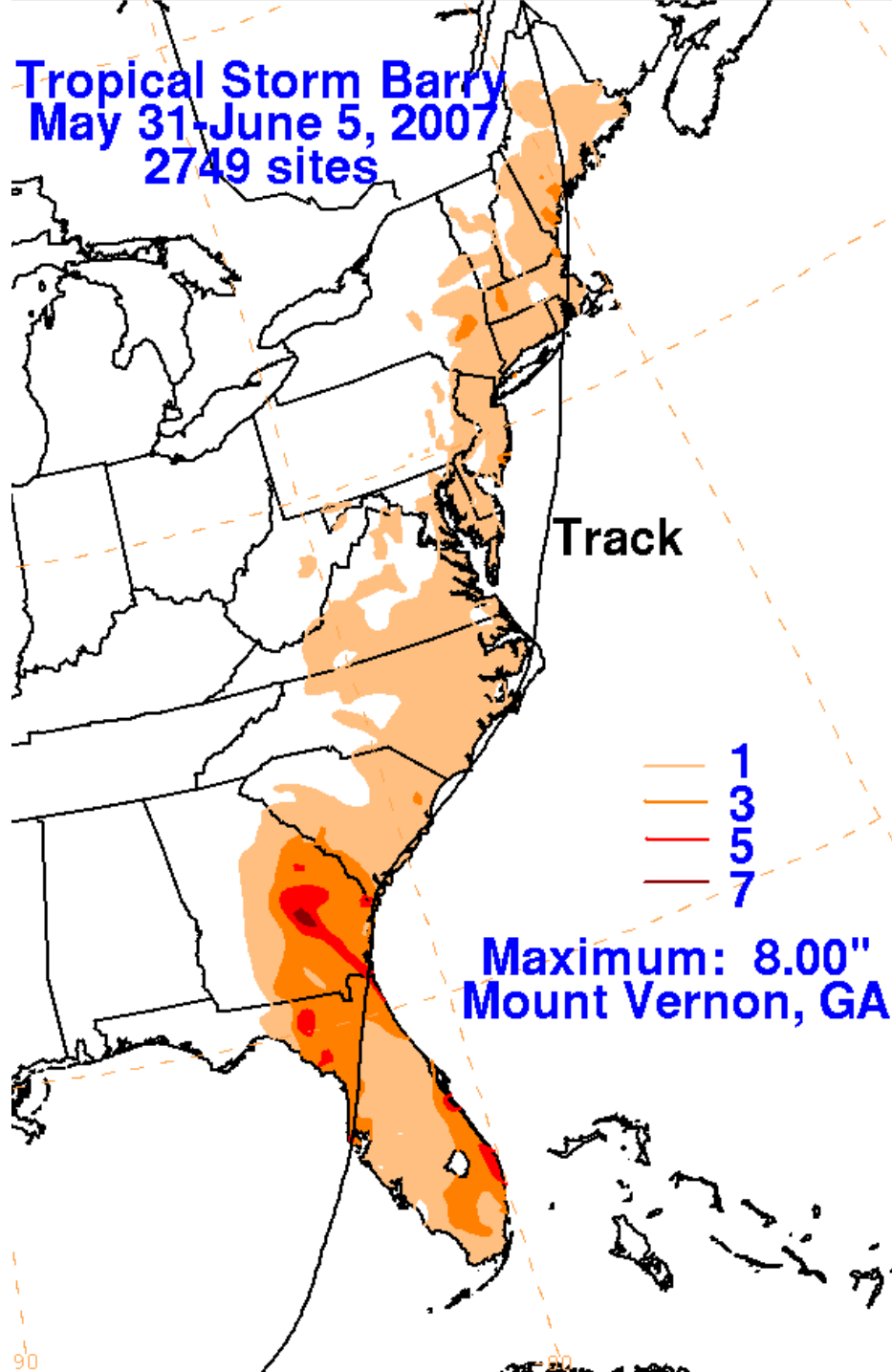
**Tropical Storm Barry**  
**1-2 Jun, 2007**  
**60 mph**



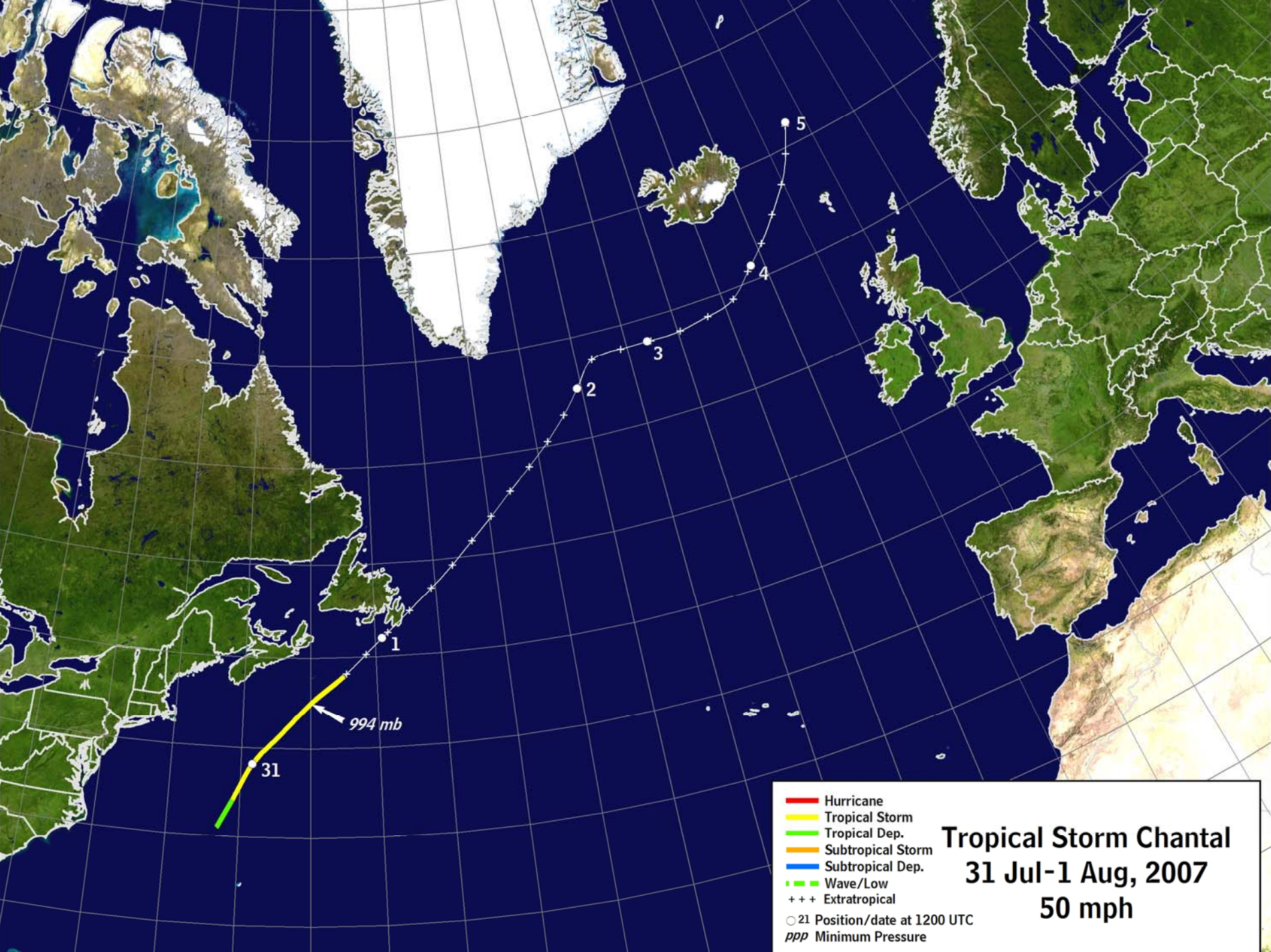


070601/1815 GOES12 VIS

**Tropical Storm Barry**  
**May 31-June 5, 2007**  
**2749 sites**







- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical
- 21 Position/date at 1200 UTC
- ppp Minimum Pressure

**Tropical Storm Chantal**  
**31 Jul-1 Aug, 2007**  
**50 mph**



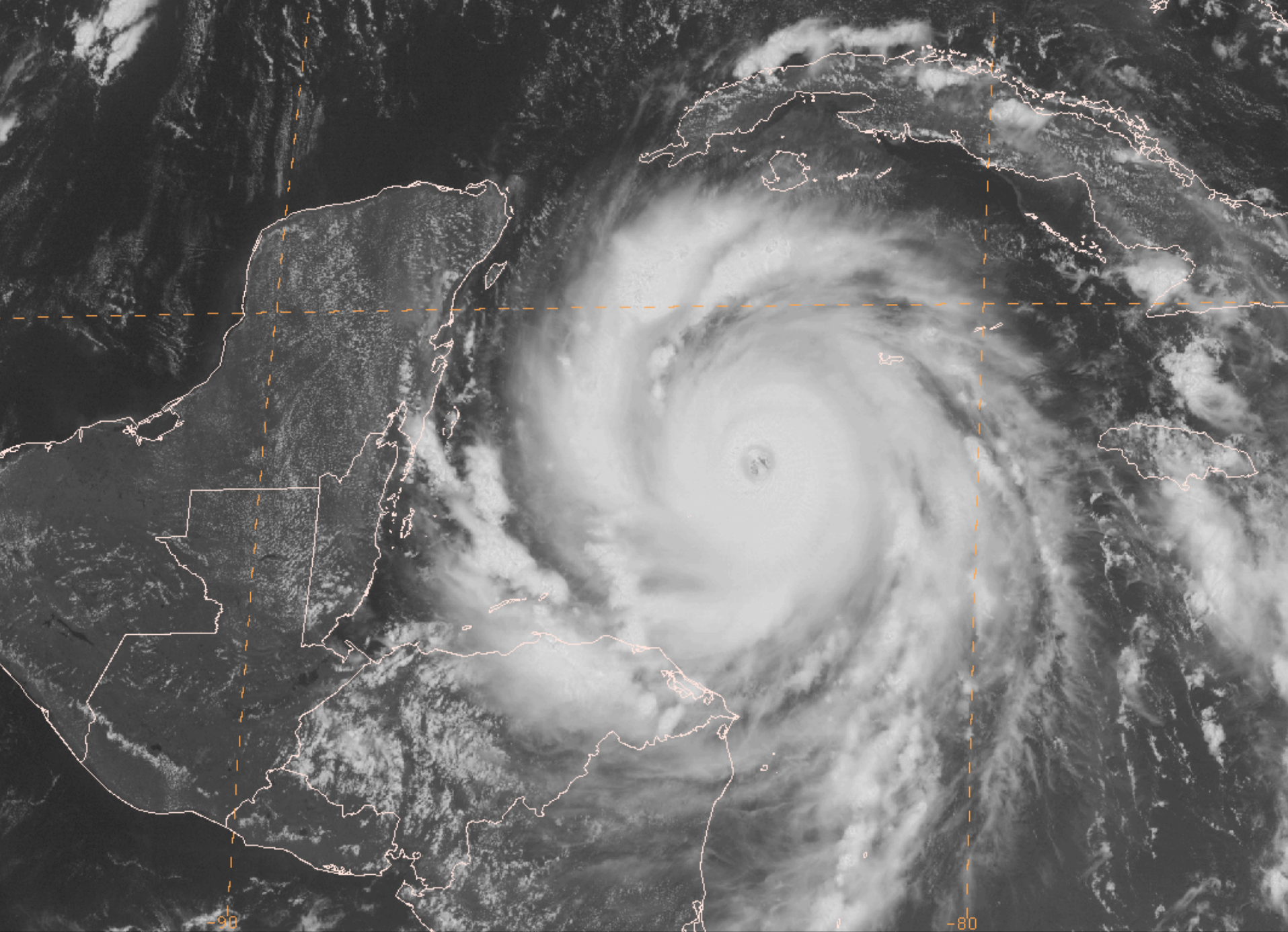


- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical

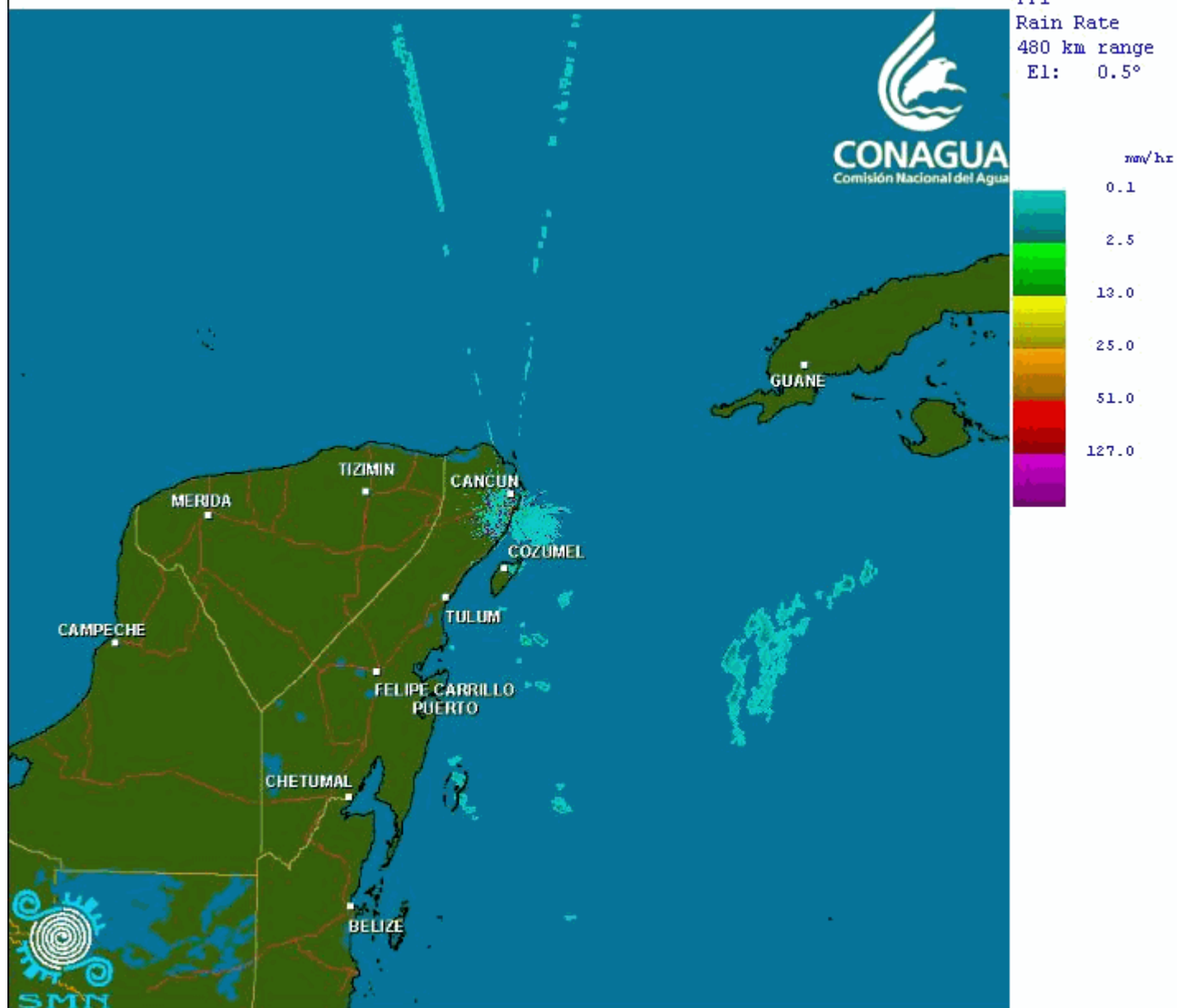
○ 21 Position/date at 1200 UTC  
ppp Minimum Pressure

**Hurricane Dean**  
**13-23 Aug, 2007**  
**175 mph**





070820/1715 GOES12 VIS





AP Photo/Brennan Linsley



# Martinique



AFP/Fernand Bibas



AP Photo/Matthew Cowen



AP Photo/Matthew Cowen



AFP/Fernand Bibas



AP Photo/Matthew Cowen



AFP/Fernand Bibas



# St. Lucia and Dominica



AP Photo/Tim James



AP Photo/Johnny Jno-Baptiste



AP Photo/Johnny Jno-Baptiste



AP Photo/Johnny Jno-Baptiste



# Jamaica

Carlos Barria  
Reuters





# Costa Maya



Photograph from Costa Maya Cruise Excursions  
[Costamayacruiseexcursions.com](http://Costamayacruiseexcursions.com)



# Costa Maya



Wikipedia, Norman Einstein

**Dock in Pieces**



# Majahual

Henry Romero, Reuters





# El Placer



## Placer del Mar



## Lazy Waves



Pictures from [www.MayanBeachCondo.com](http://www.MayanBeachCondo.com)





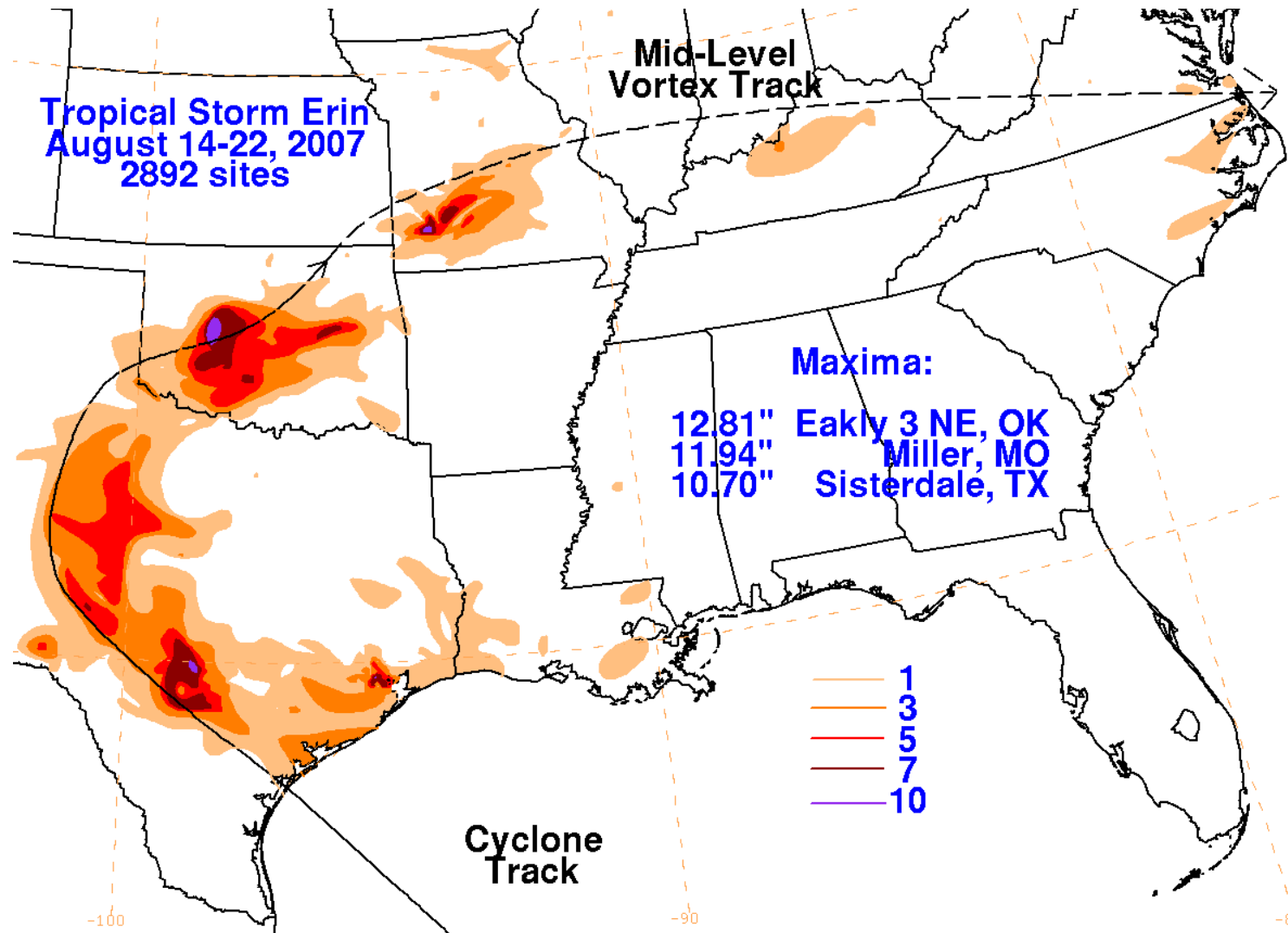
- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical

○ 21 Position/date at 1200 UTC  
ppp Minimum Pressure

**Tropical Storm Erin**  
**15-17 Aug, 2007**  
**40 mph**



# Erin Rainfall



05:57 CDT

08/19/07



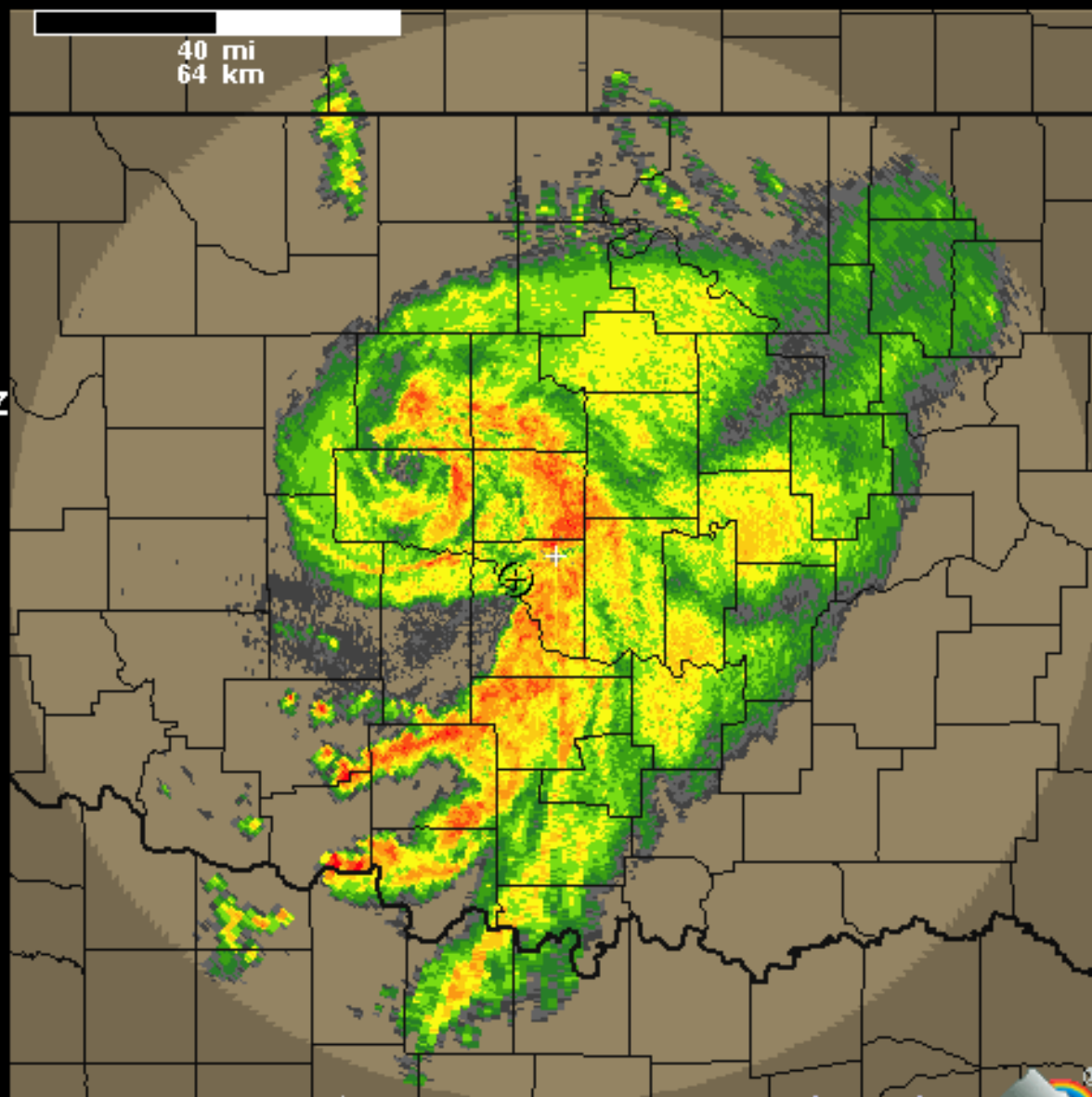
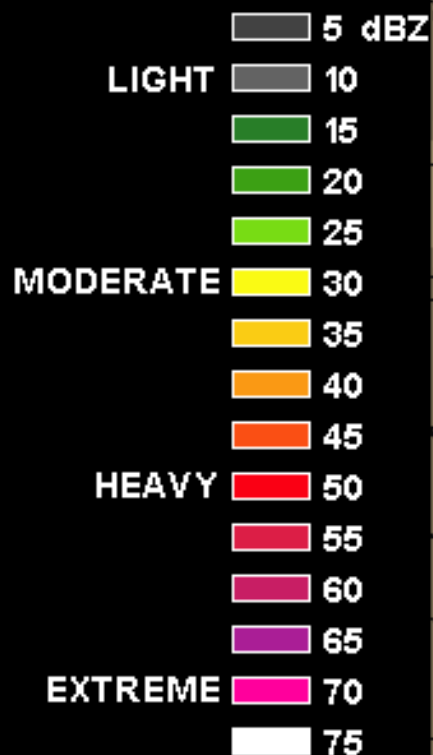
10:57 UTC

08/19/07

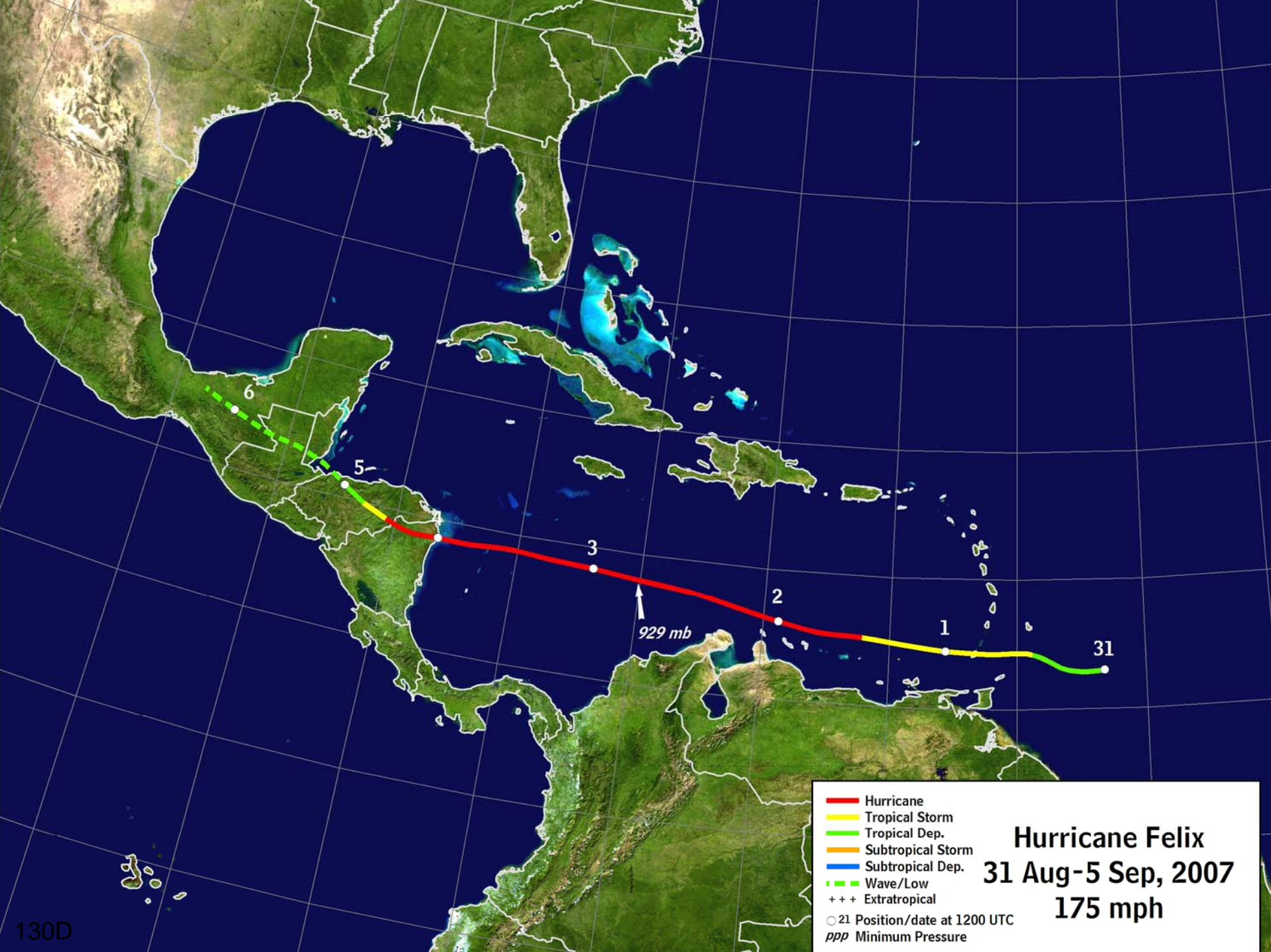
1 / 6

Max reflectivity 55 dbZ

Vol. cov. pattern 11

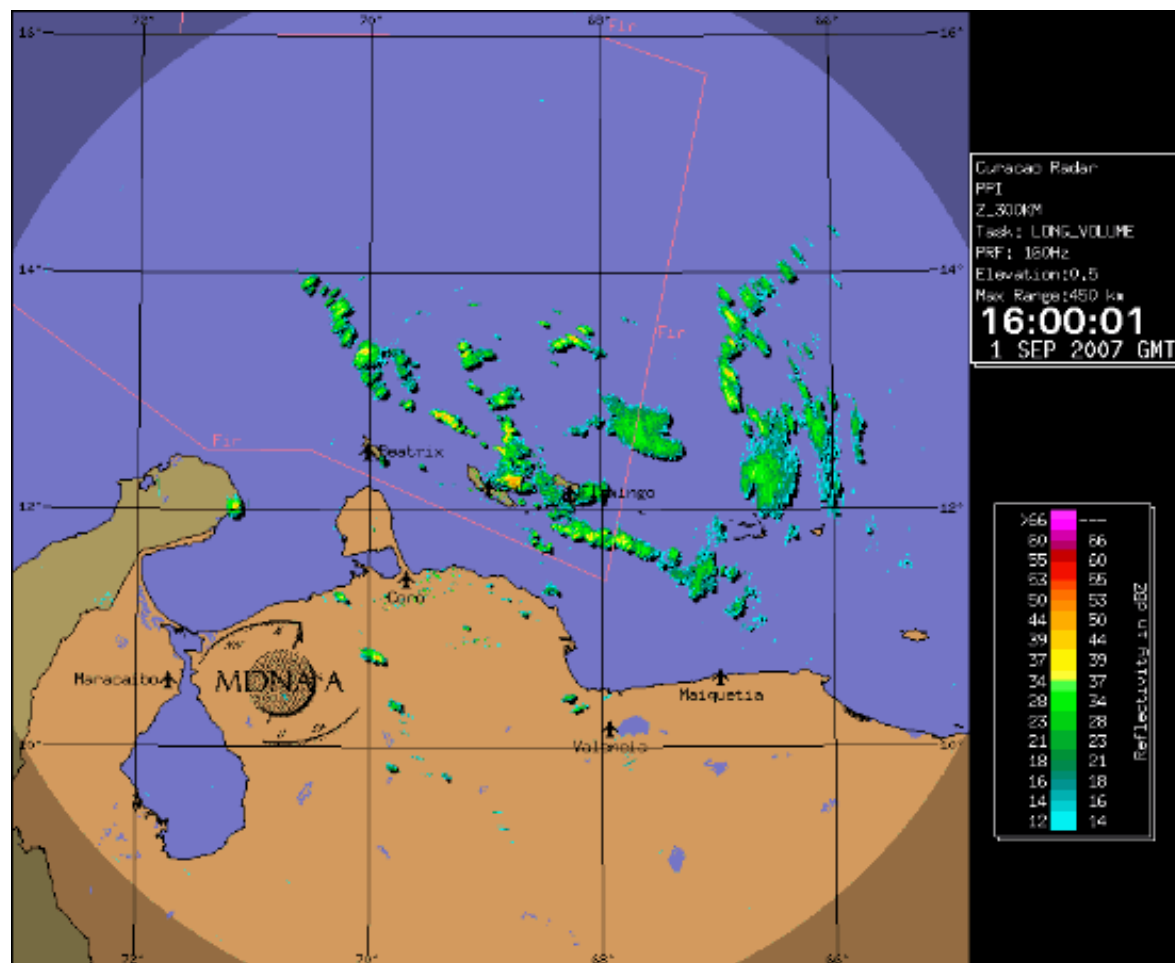




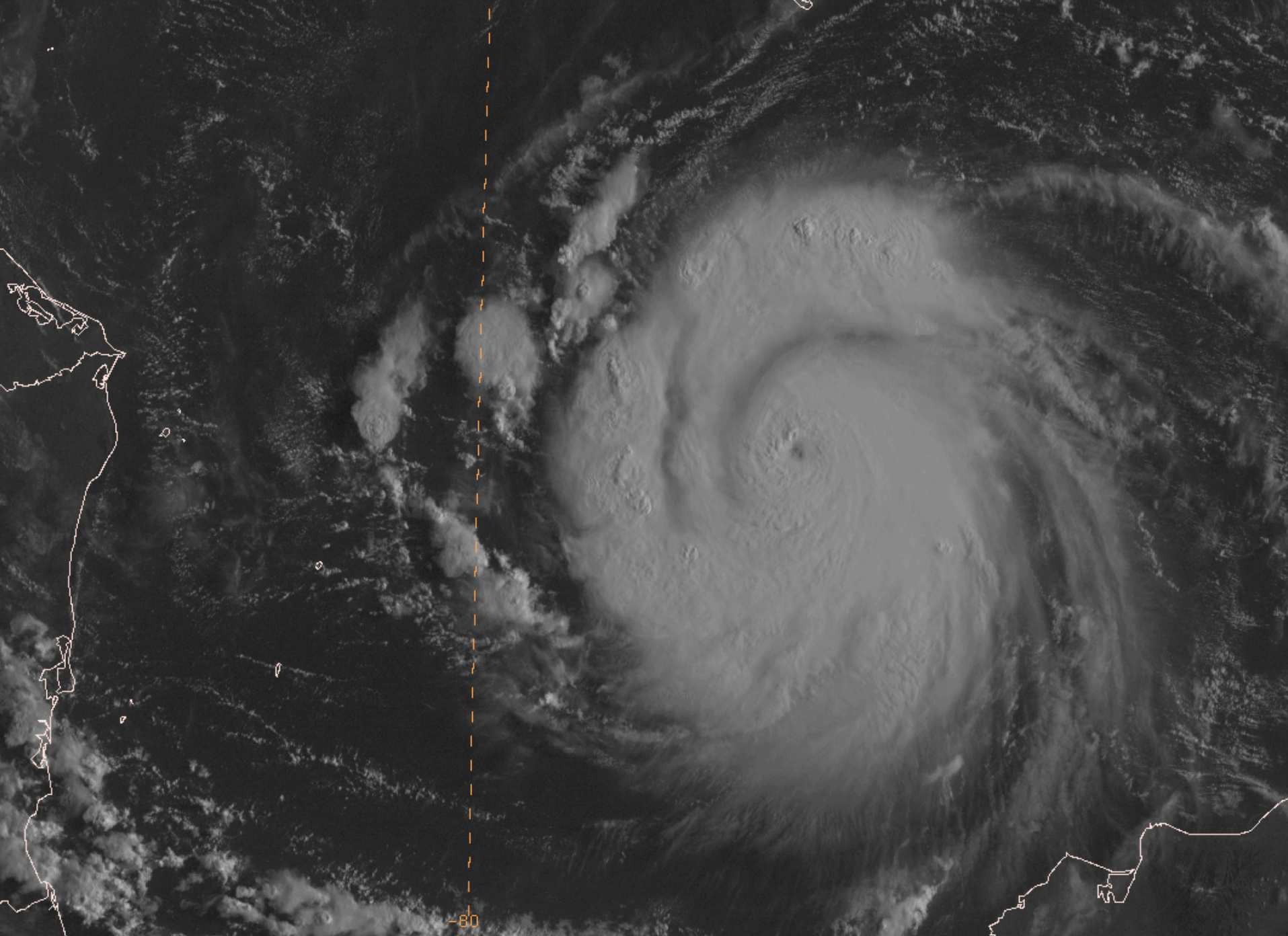


- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical
- 21 Position/date at 1200 UTC
- ppp Minimum Pressure

**Hurricane Felix**  
**31 Aug-5 Sep, 2007**  
**175 mph**







-80





# Puerto Cabezas, Nicaragua



Oswaldo Rivas  
Reuters







Puerto Cabezas  
AP Photo/La Prensa,  
German Miranda



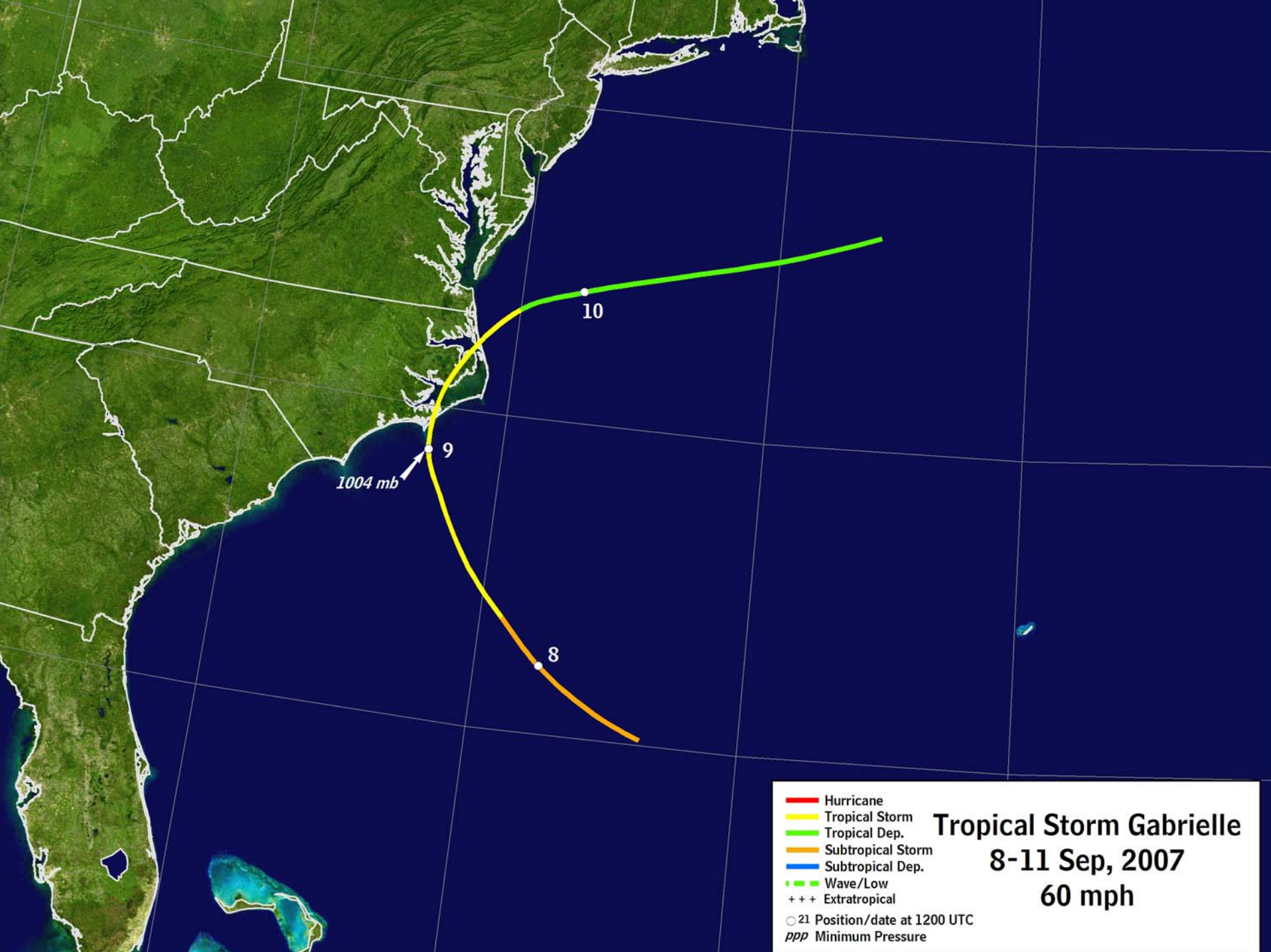
Sandy Bay, Miskito Coast  
AFP/Oscar Navarrete



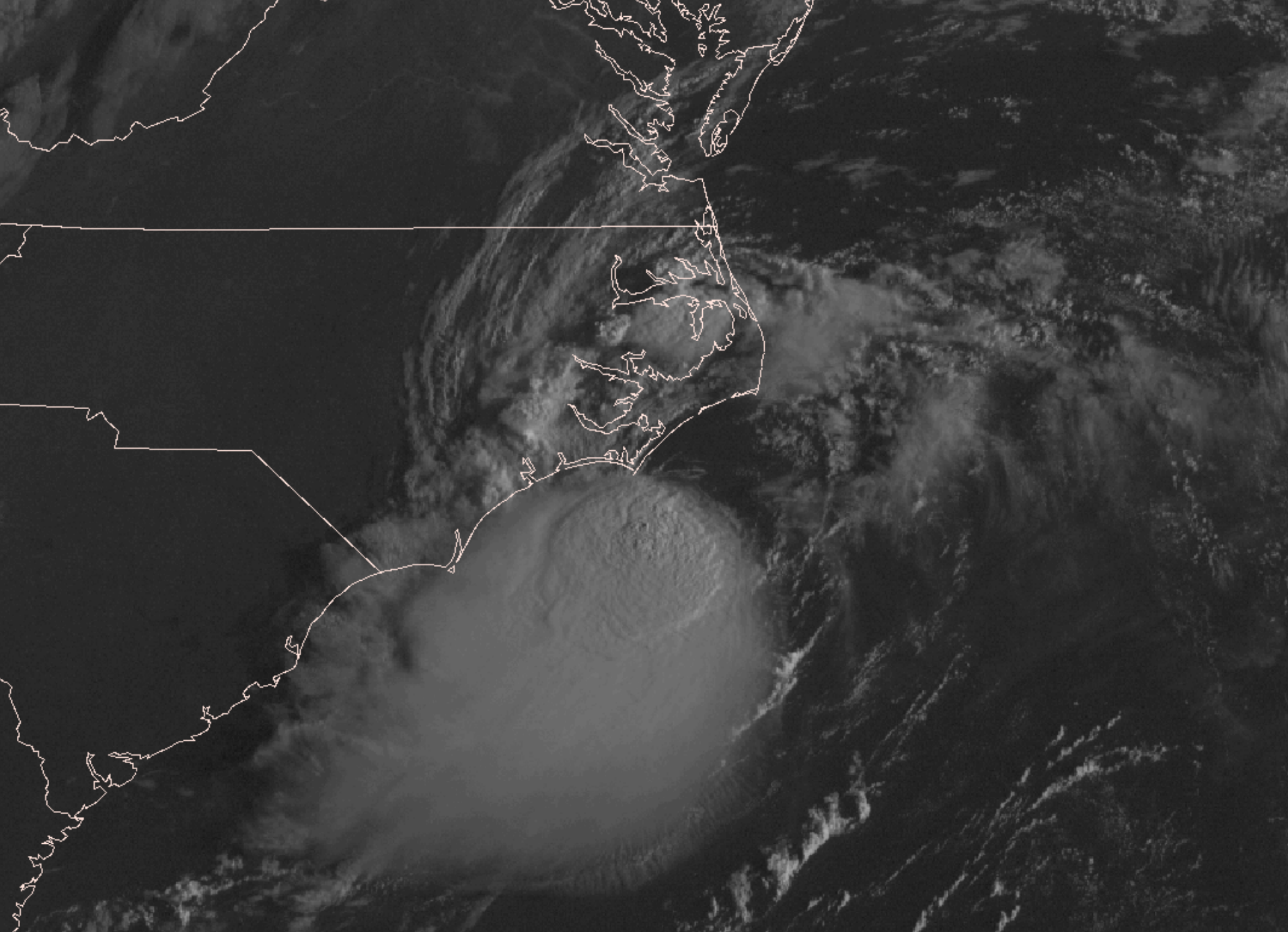
Puerto Cabezas  
AP Photo/La Prensa,  
German Miranda



Puerto Cabezas  
AP Photo/Ariel Leon







070909/1215 GOES12 VIS

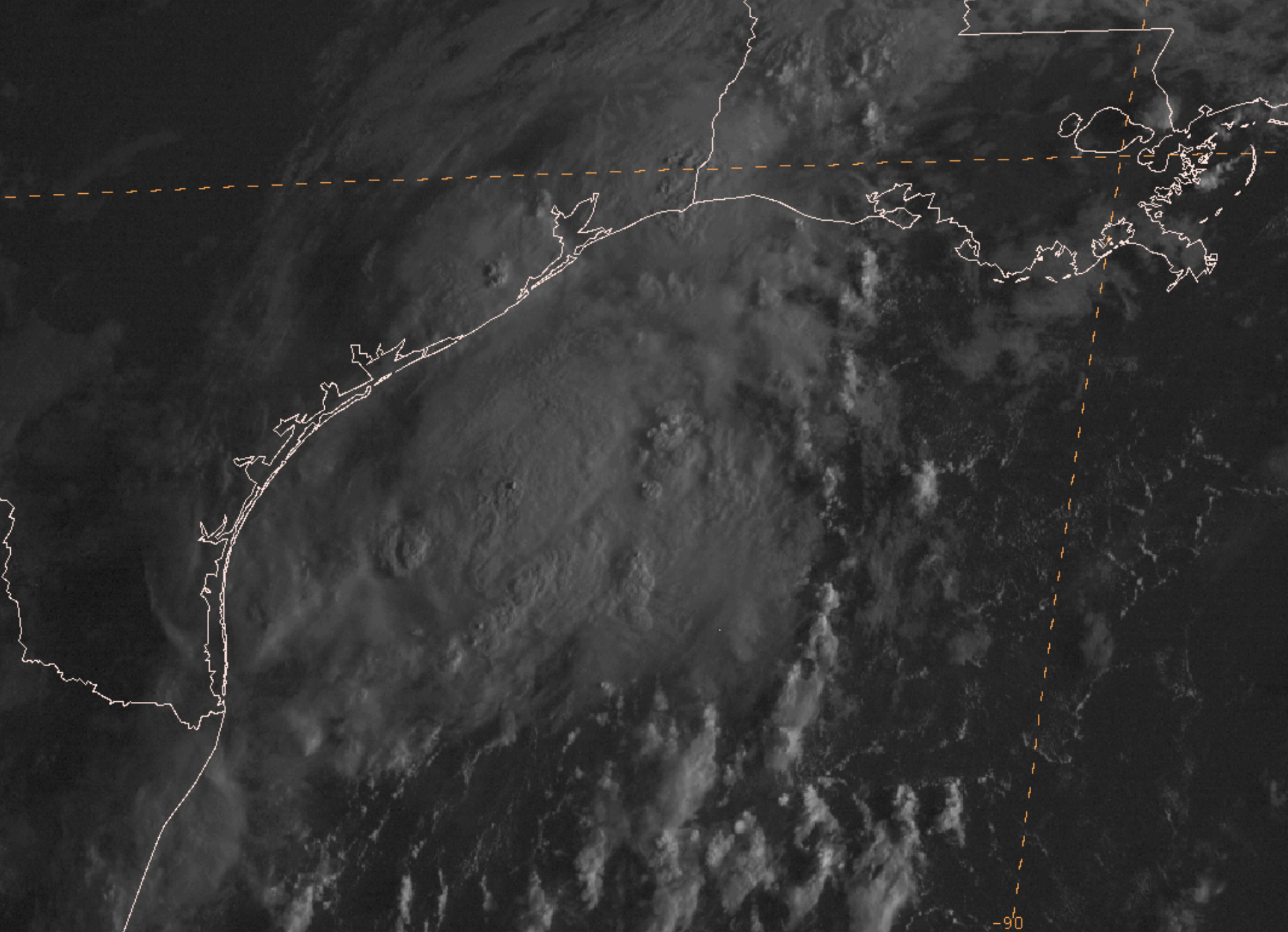




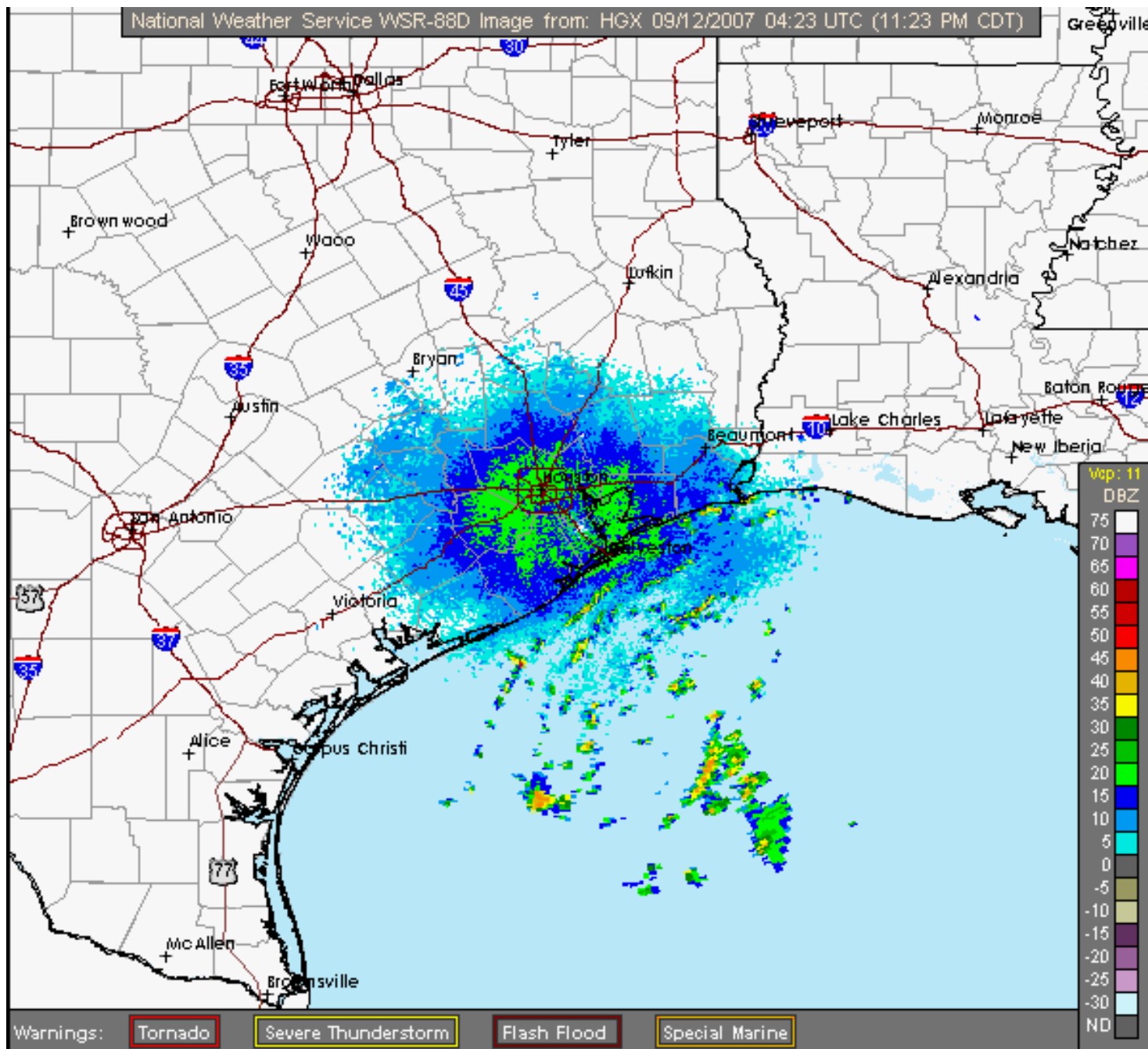
- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical
- 21 Position/date at 1200 UTC
- ppp Minimum Pressure

**Hurricane Humberto**  
**12-14 Sep, 2007**  
**90 mph**



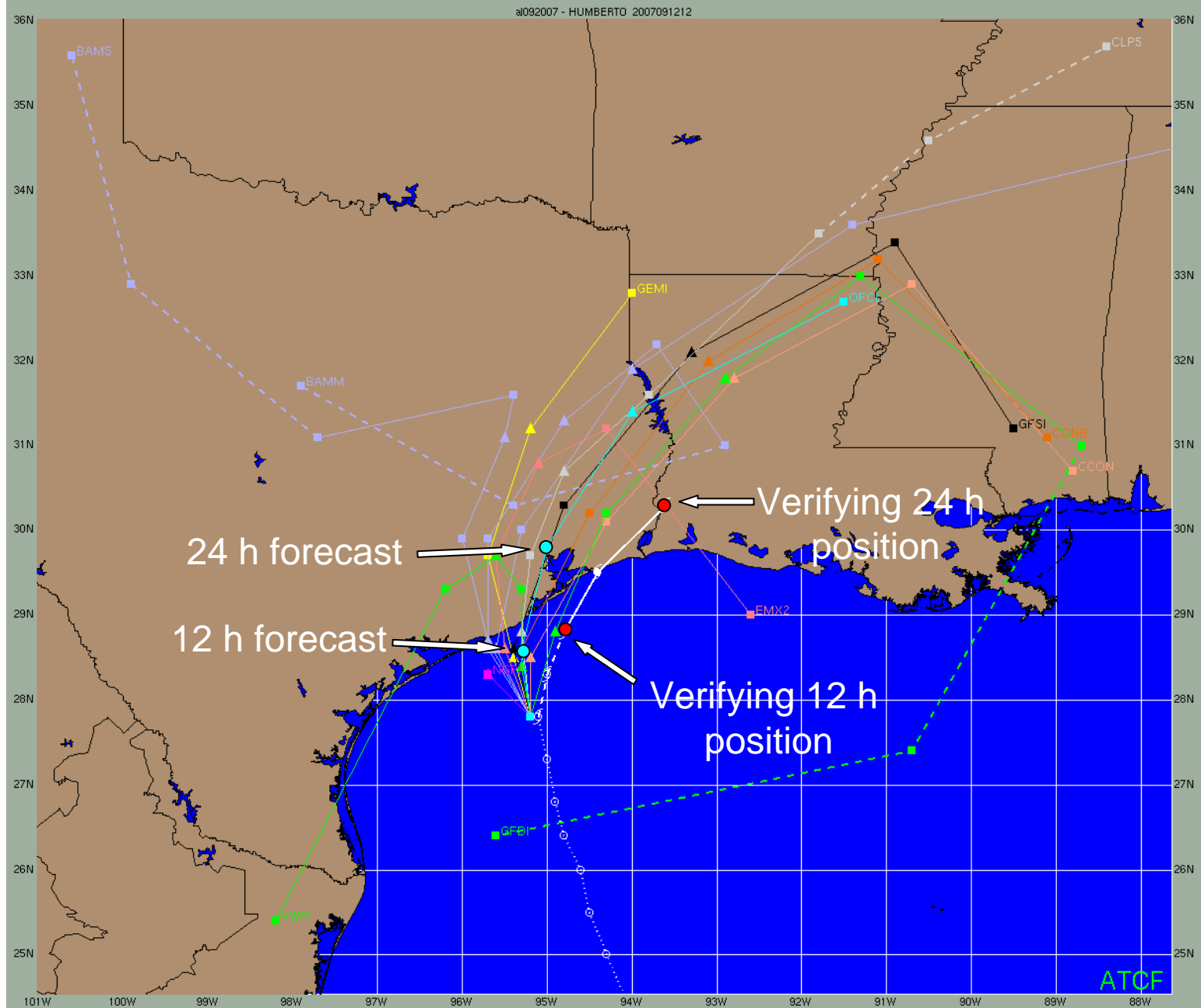


National Weather Service WSR-88D Image from: HGX 09/12/2007 04:23 UTC (11:23 PM CDT)



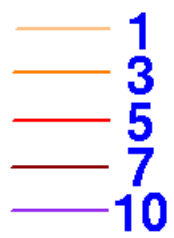


# Humberto Track Guidance For First Advisory



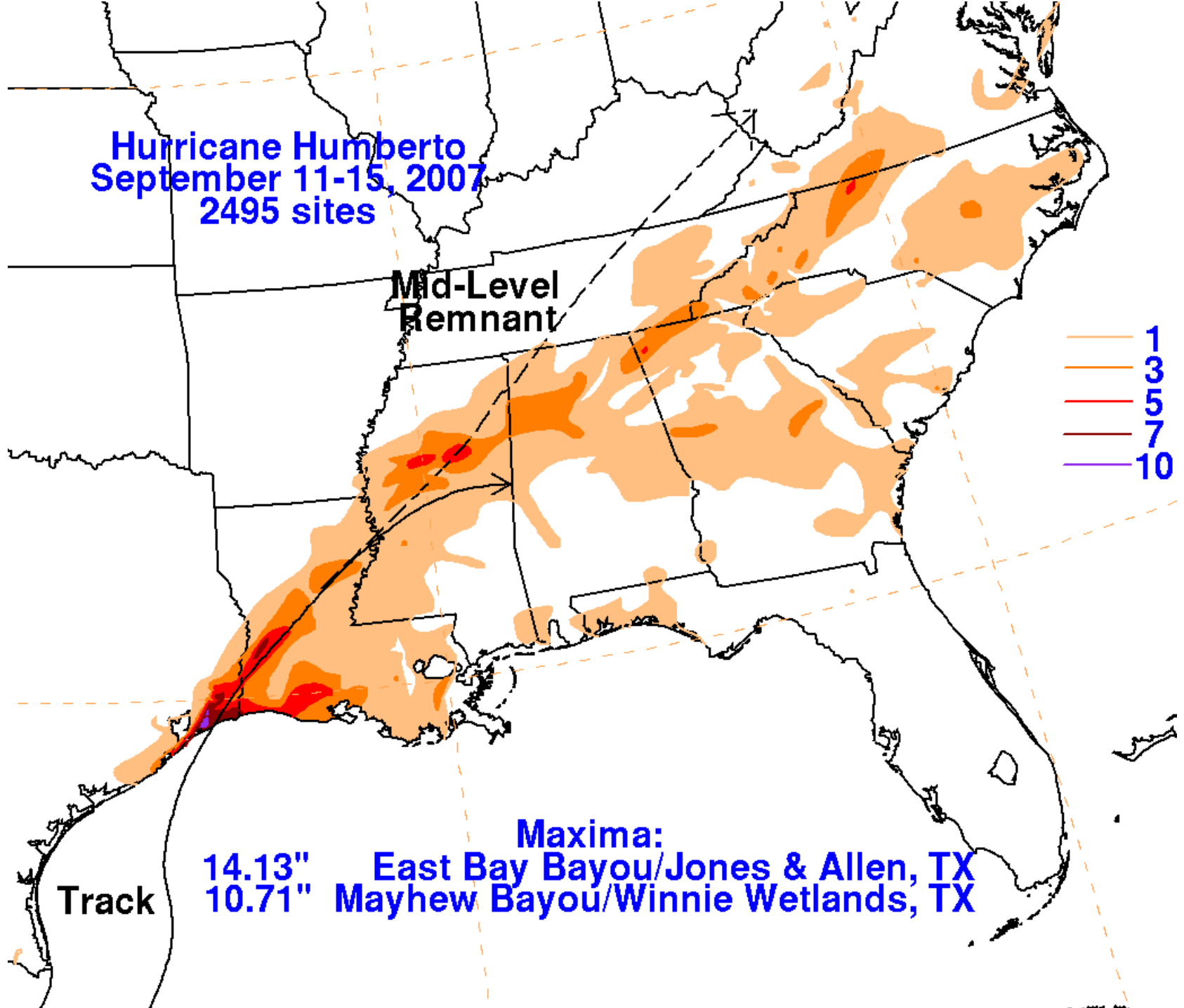
**Hurricane Humberto**  
**September 11-15, 2007**  
**2495 sites**

**Mid-Level  
Remnant**



**Track**

**Maxima:**  
**14.13" East Bay Bayou/Jones & Allen, TX**  
**10.71" Mayhew Bayou/Winnie Wetlands, TX**





# High Island, Texas



Sharon Steinmann: Chronicle



Dave Einsel: Getty Images



Dave Einsel: Getty Images



Melissa Phillip: Chronicle



Melissa Phillip: Chronicle

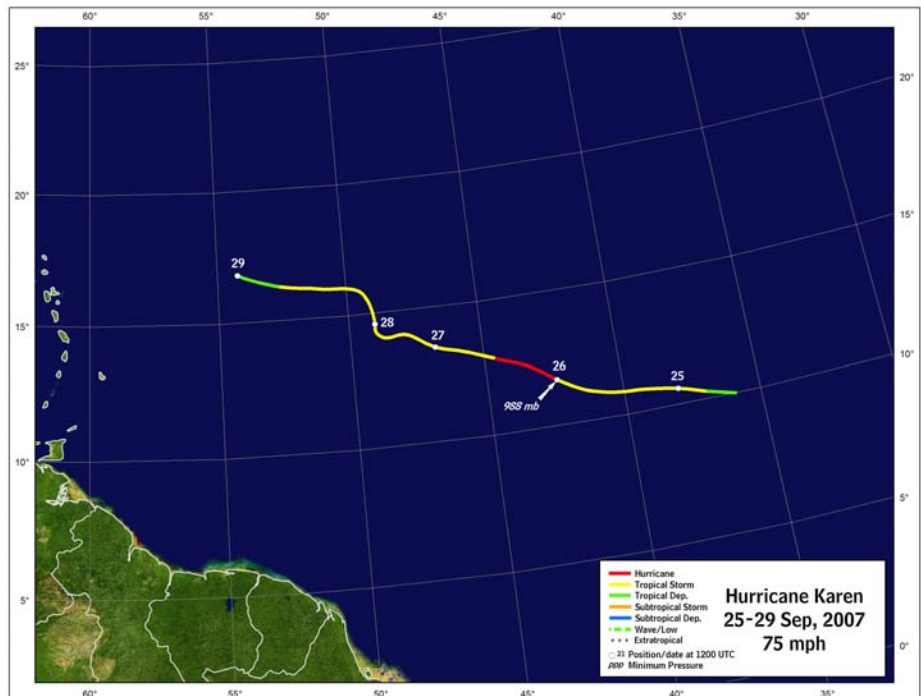
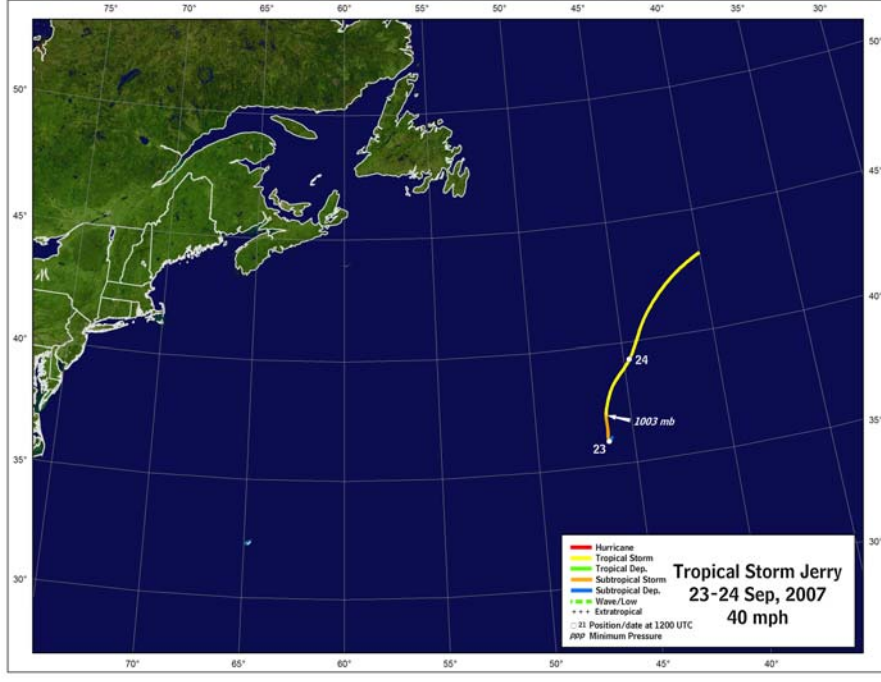
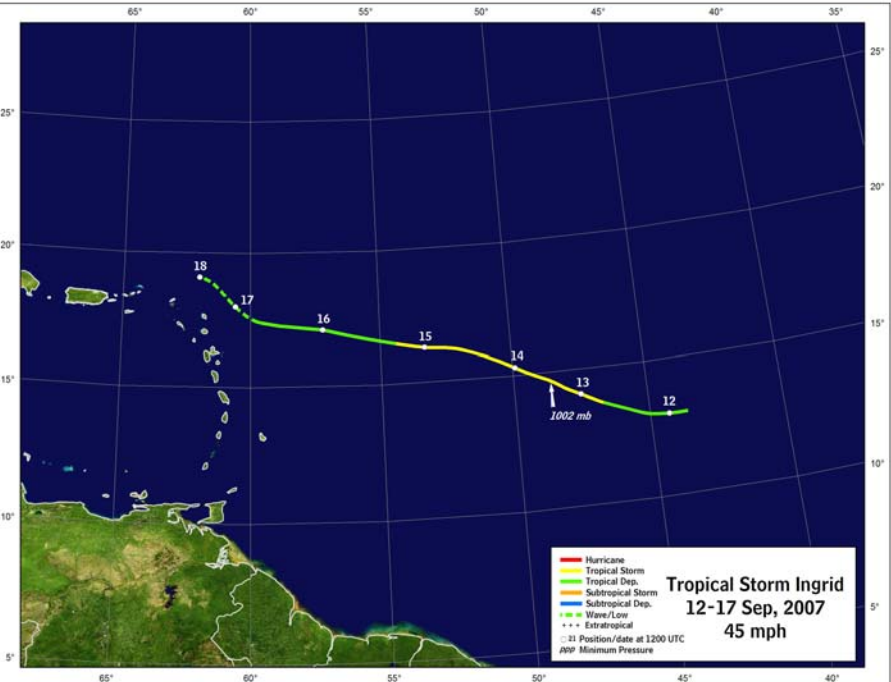


Kevin M. Cox: AP

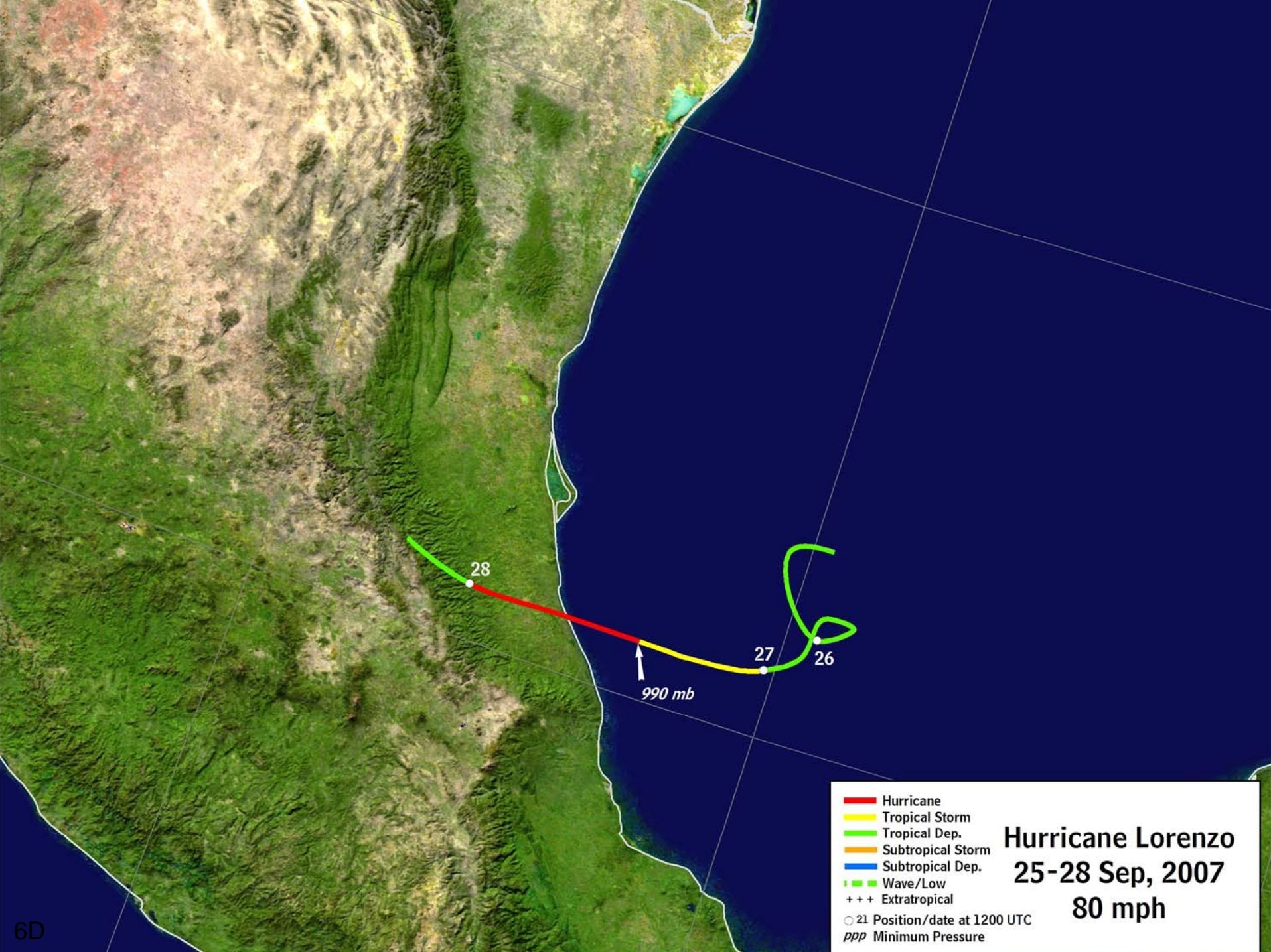


Kevin M. Cox: AP



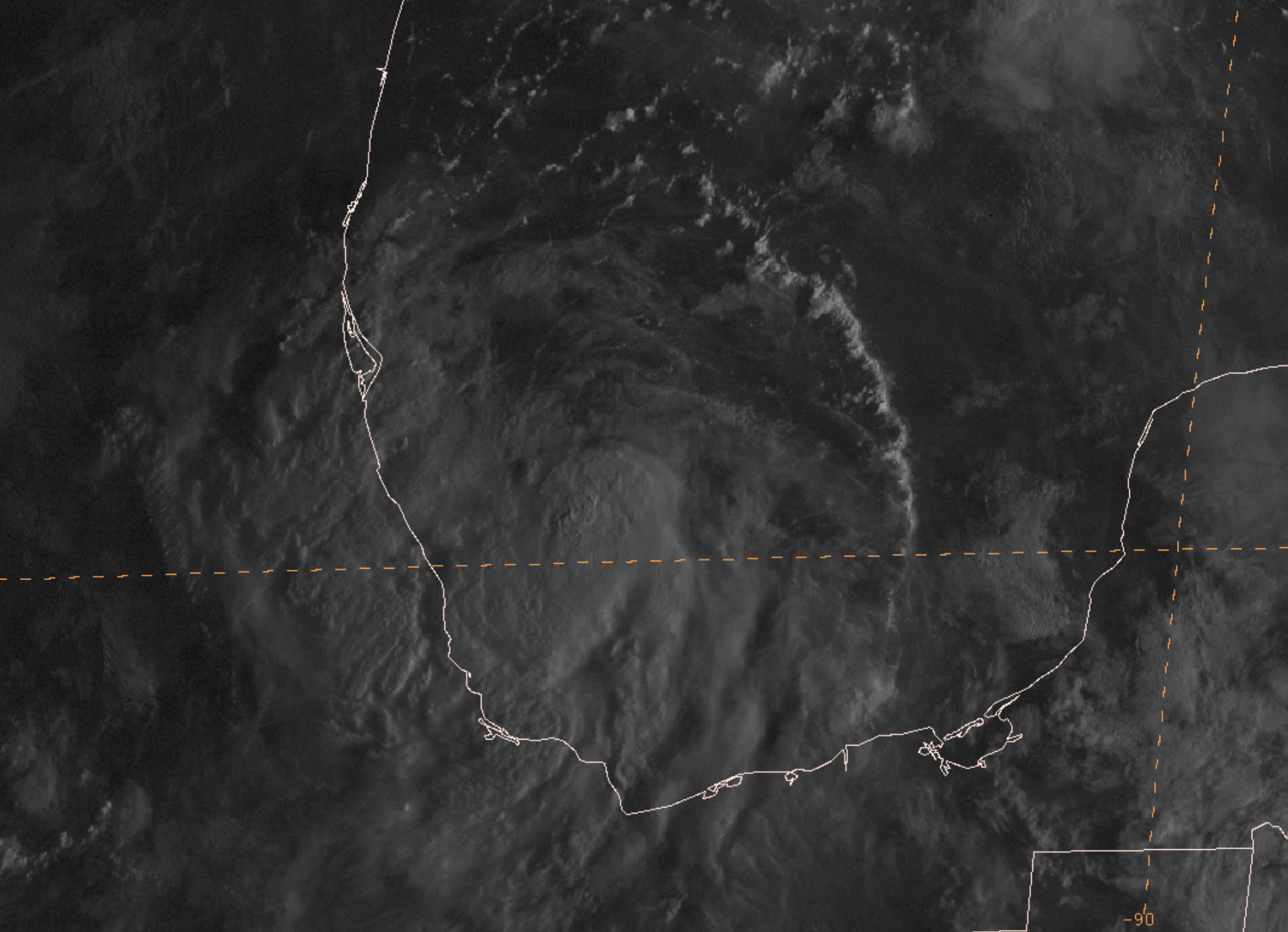






- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical
- 21 Position/date at 1200 UTC
- ppp Minimum Pressure

**Hurricane Lorenzo**  
**25-28 Sep, 2007**  
**80 mph**



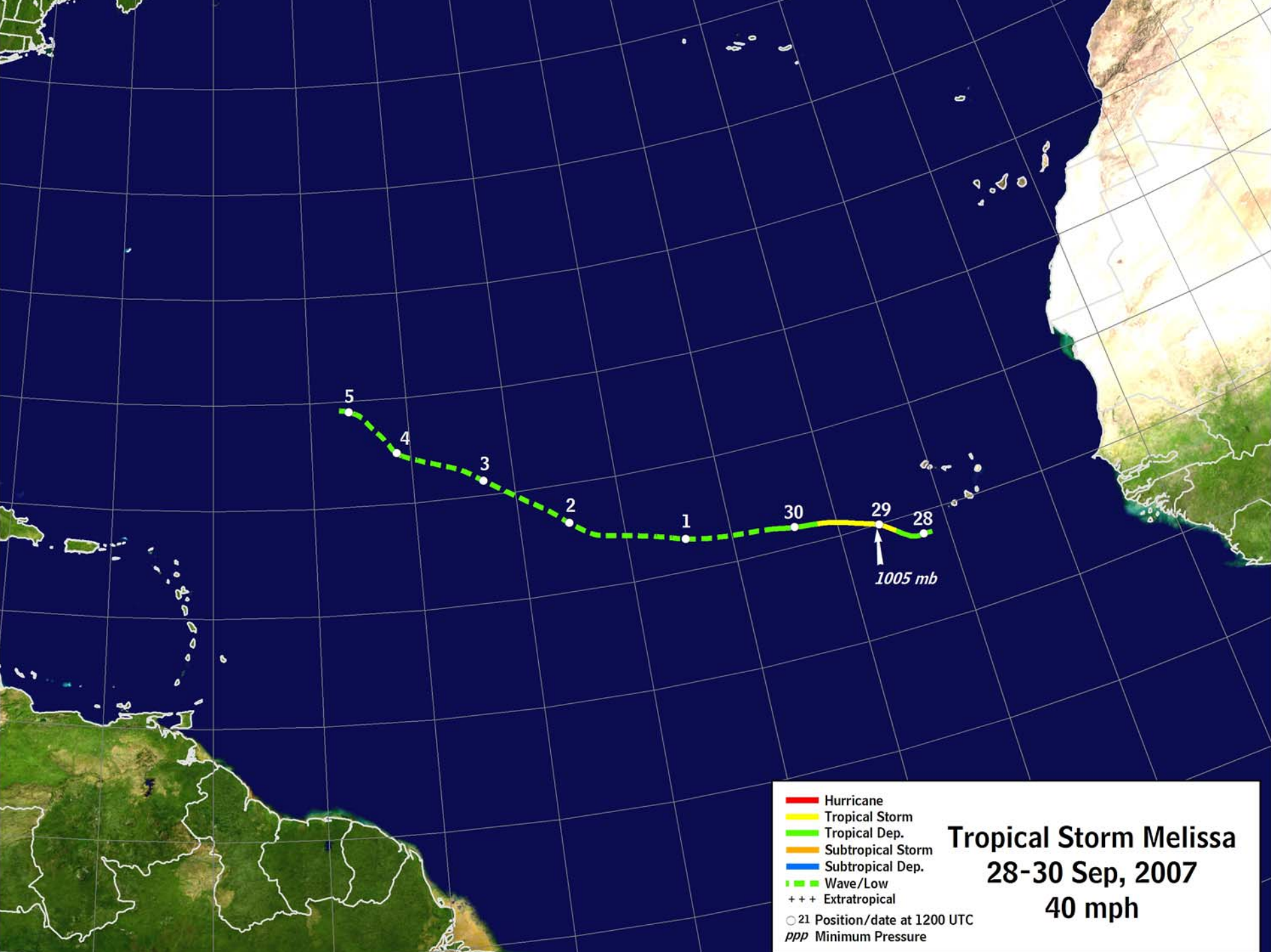
-90



Lorenzo Flooding





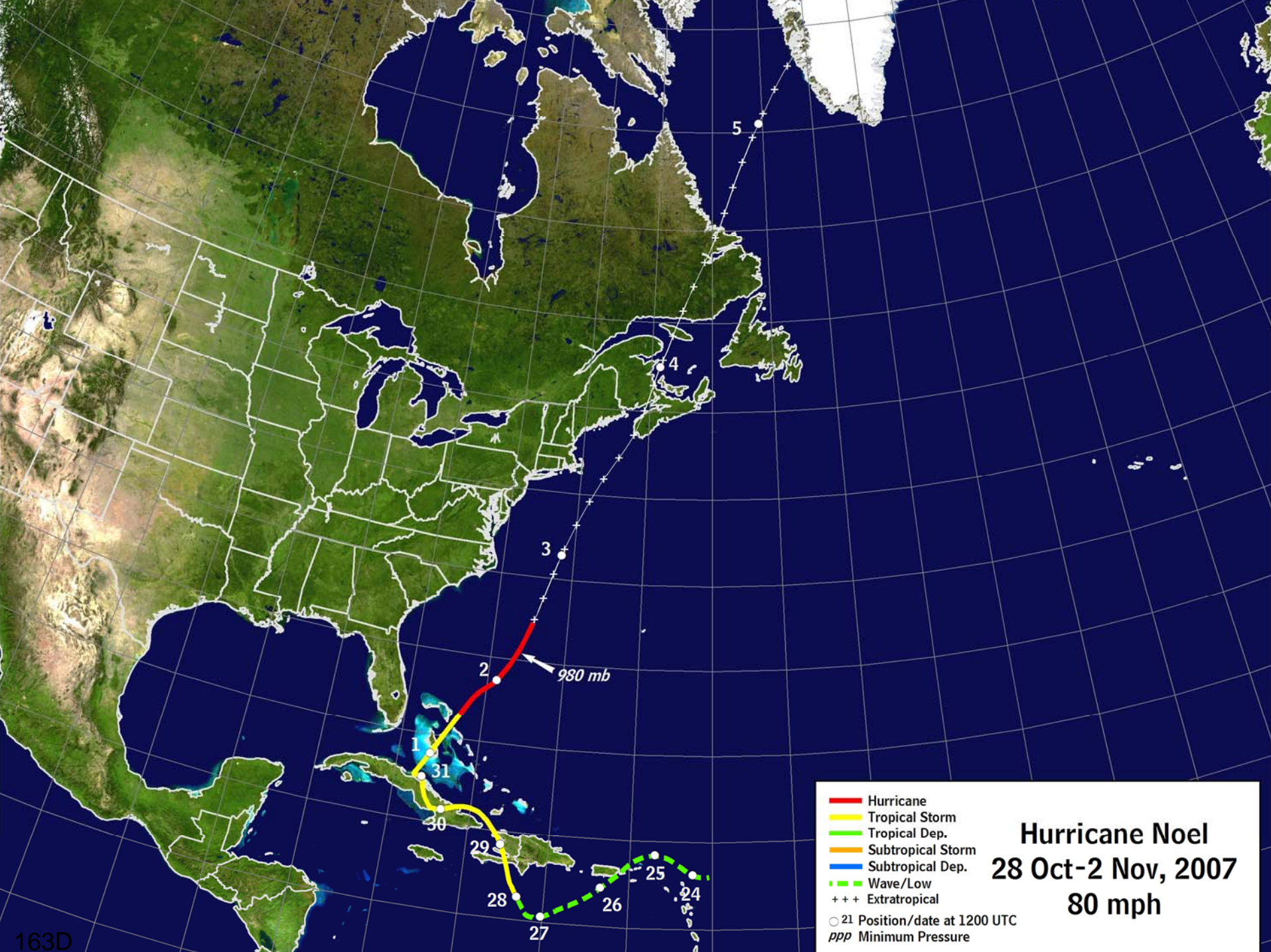


- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical

○ 21 Position/date at 1200 UTC  
ppp Minimum Pressure

**Tropical Storm Melissa**  
**28-30 Sep, 2007**  
**40 mph**





- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical
- 21 Position/date at 1200 UTC
- ppp Minimum Pressure

**Hurricane Noel**  
**28 Oct-2 Nov, 2007**  
**80 mph**

Fecha: 29/10/2007

Hora local: 08:45 am

**Maximos**  
(Nexrad: LRM)

Alcance 450 km

Nivel inferior 1500 m

Nivel superior 20000 m

Celda 500 m / 1.0°

**Escala de intensidades**

dBZ

80.0 extremo

75.0

70.0

65.0 severo

60.0

55.0

50.0 fuerte

45.0

40.0

35.0 moderado

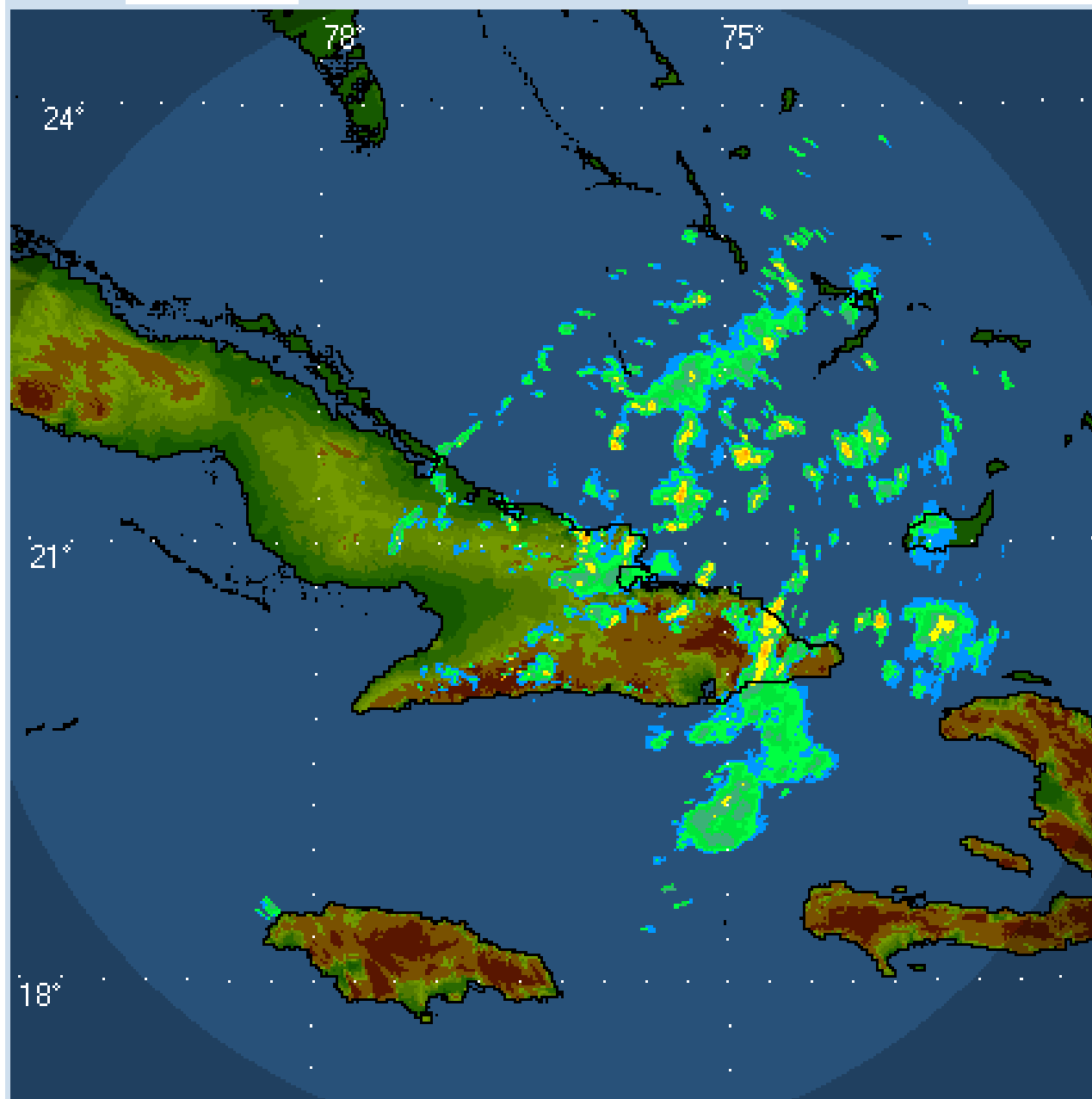
30.0

25.0

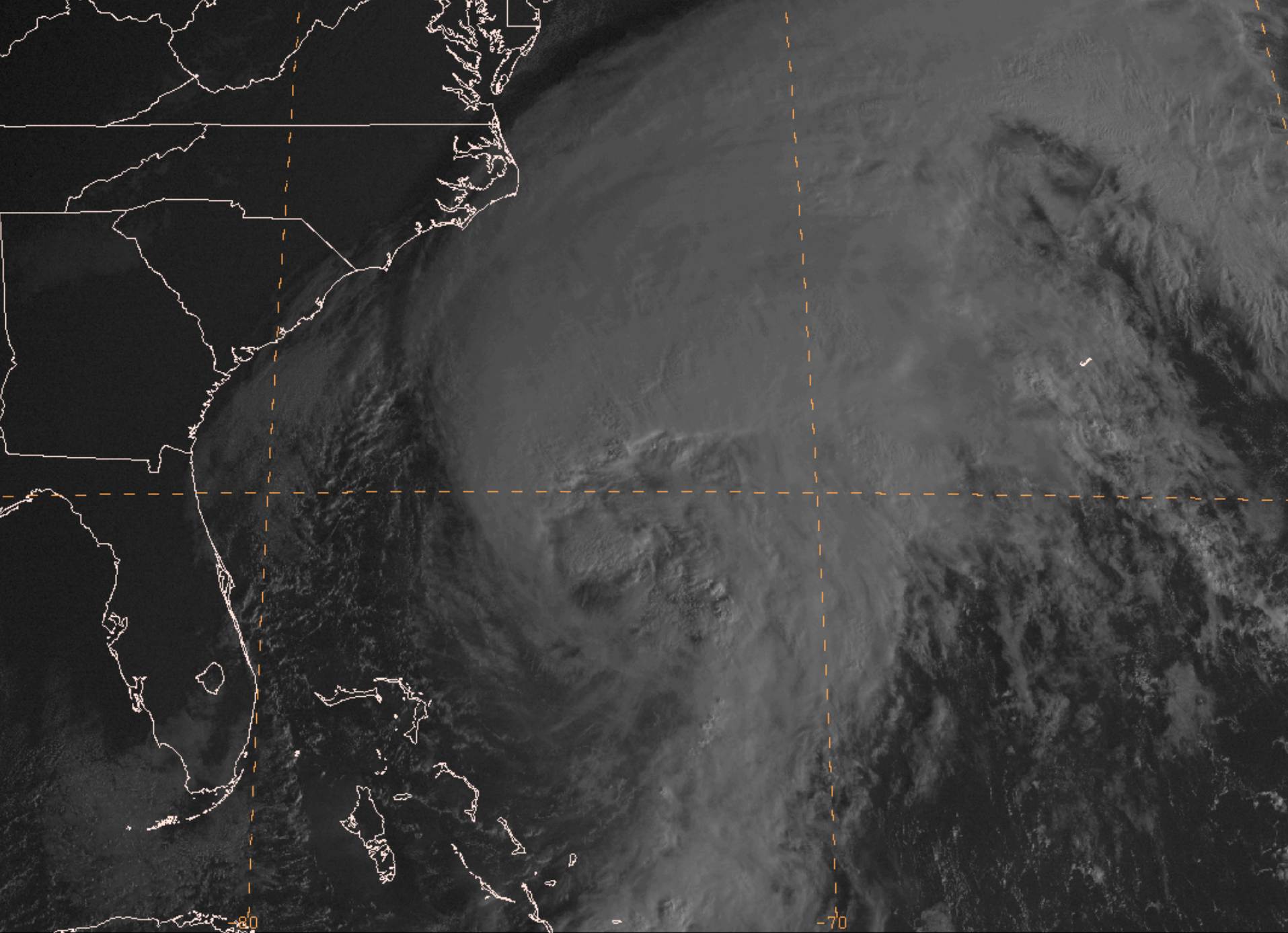
20.0 débil

15.0

10.0





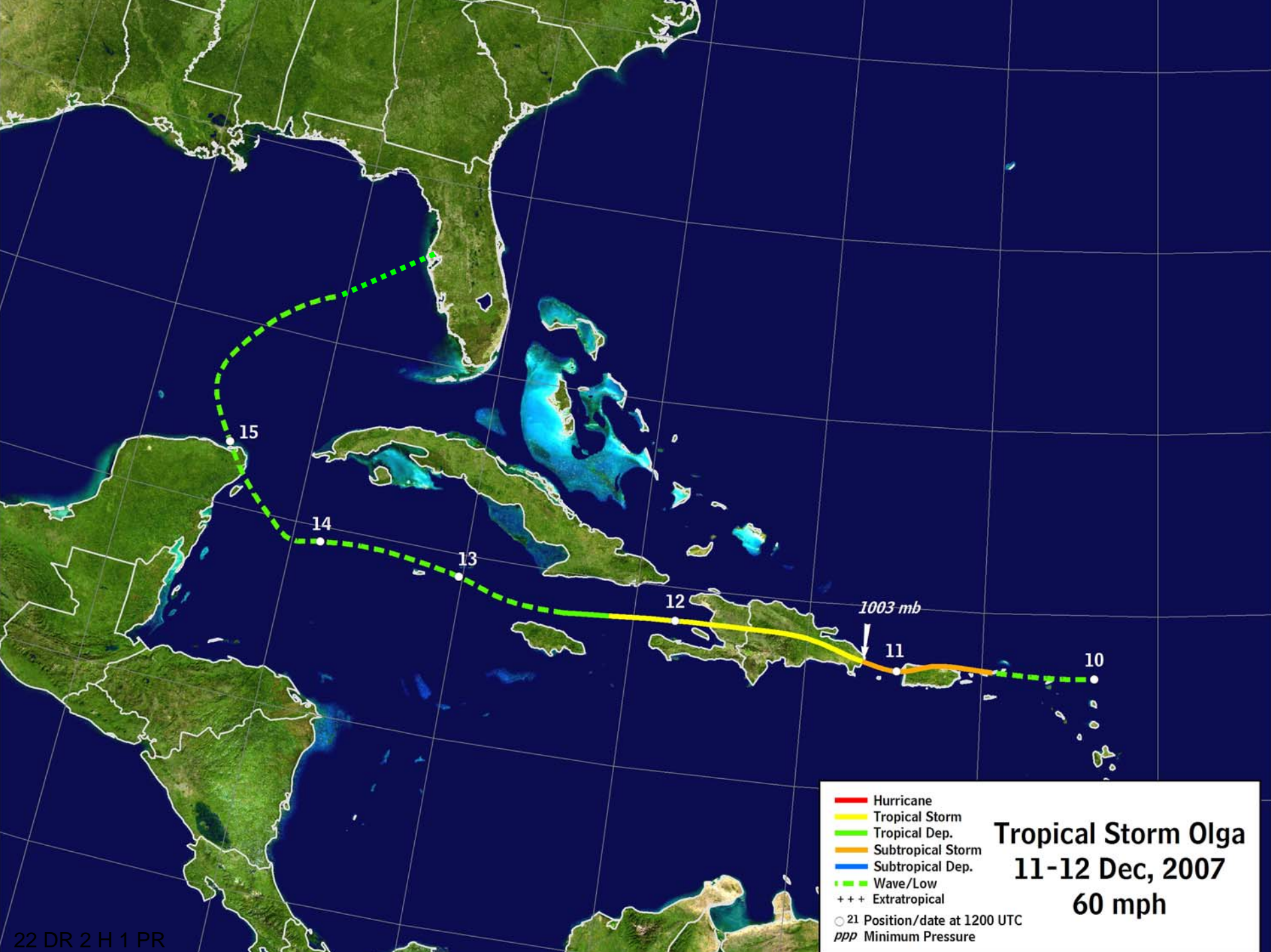


071102/1215 GOES12 VIS

# Aerosonde



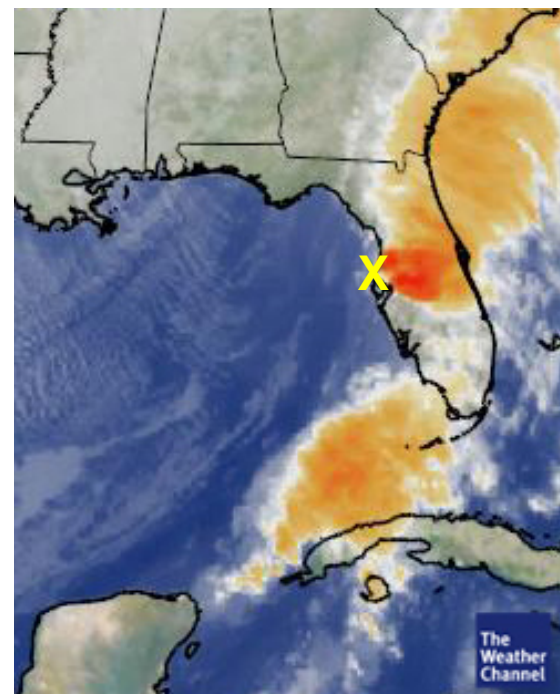
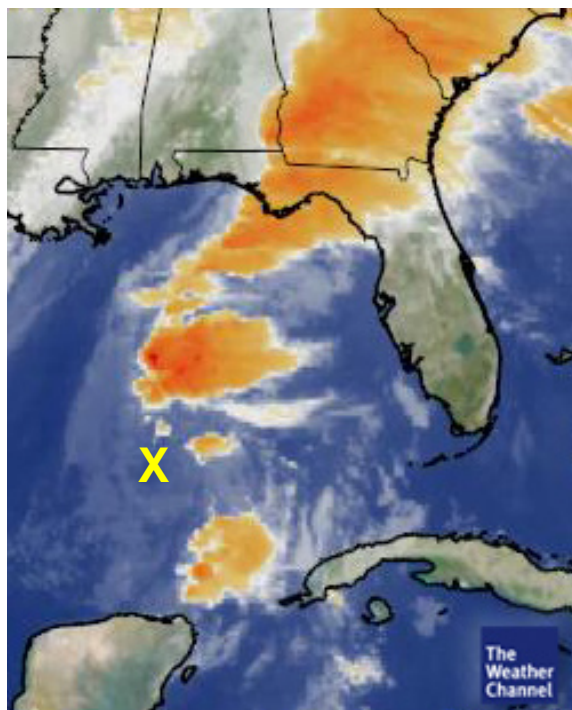
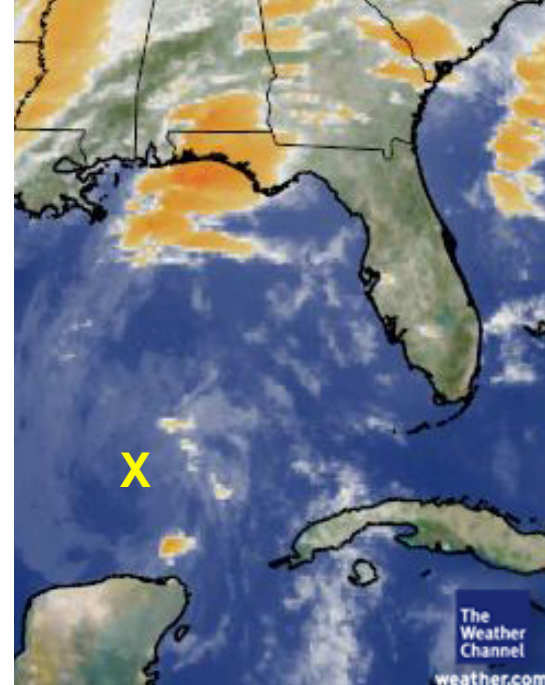
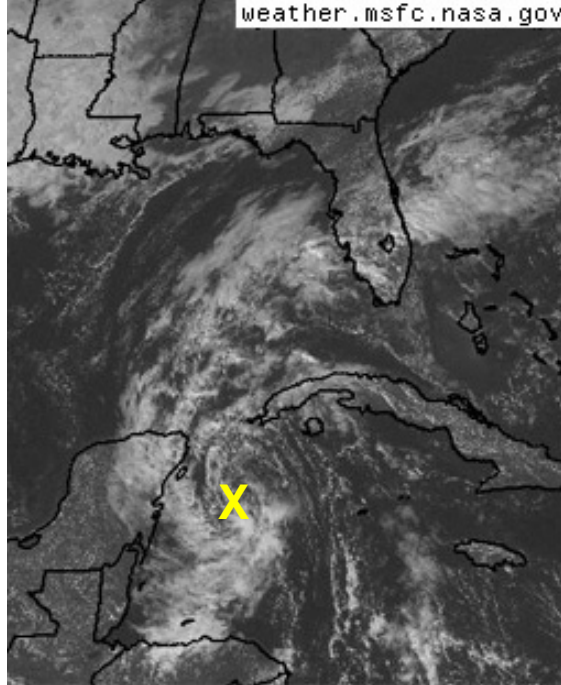




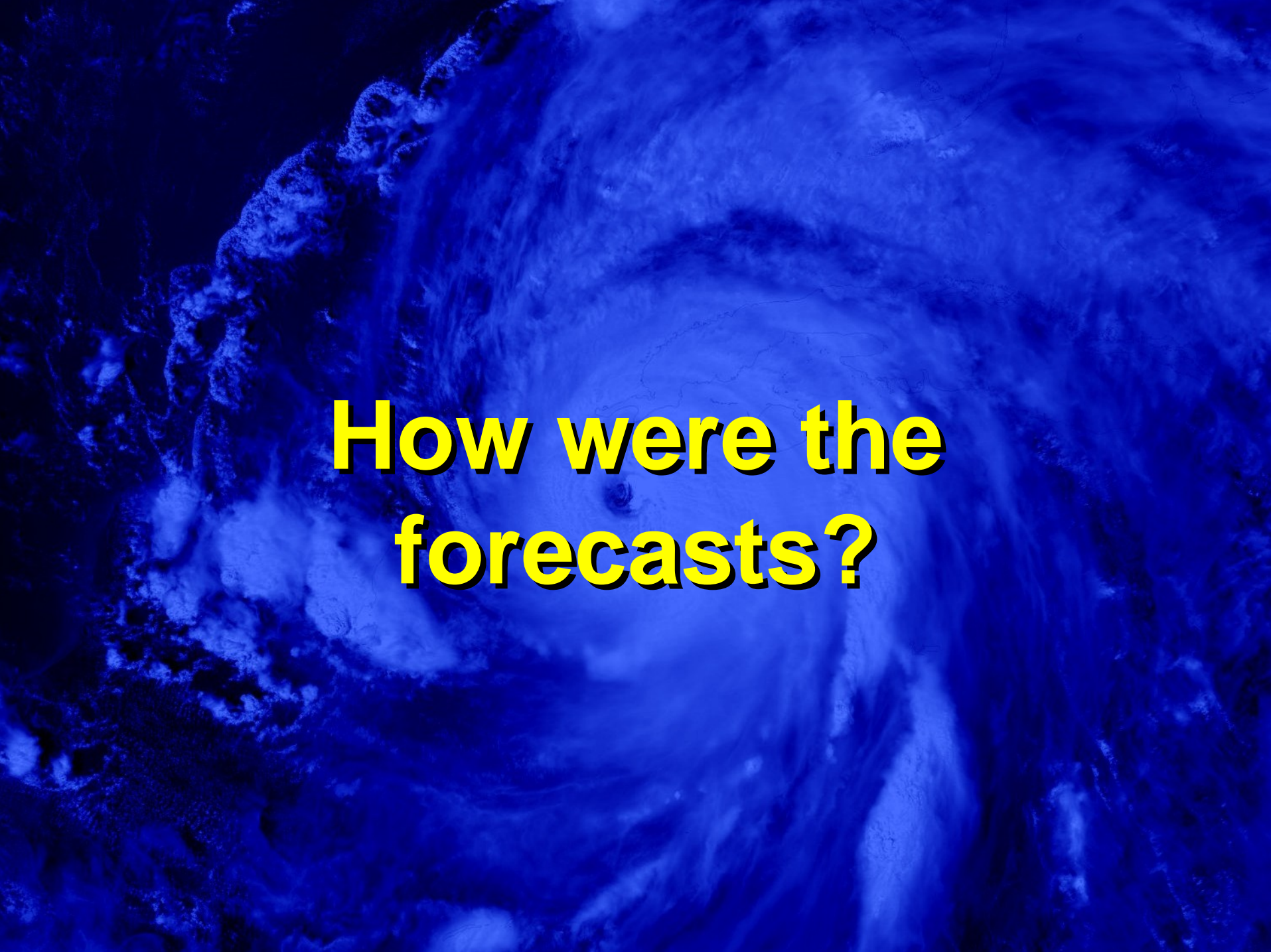
- Hurricane
- Tropical Storm
- Tropical Dep.
- Subtropical Storm
- Subtropical Dep.
- Wave/Low
- +++ Extratropical

○ 21 Position/date at 1200 UTC  
ppp Minimum Pressure

**Tropical Storm Olga**  
**11-12 Dec, 2007**  
**60 mph**

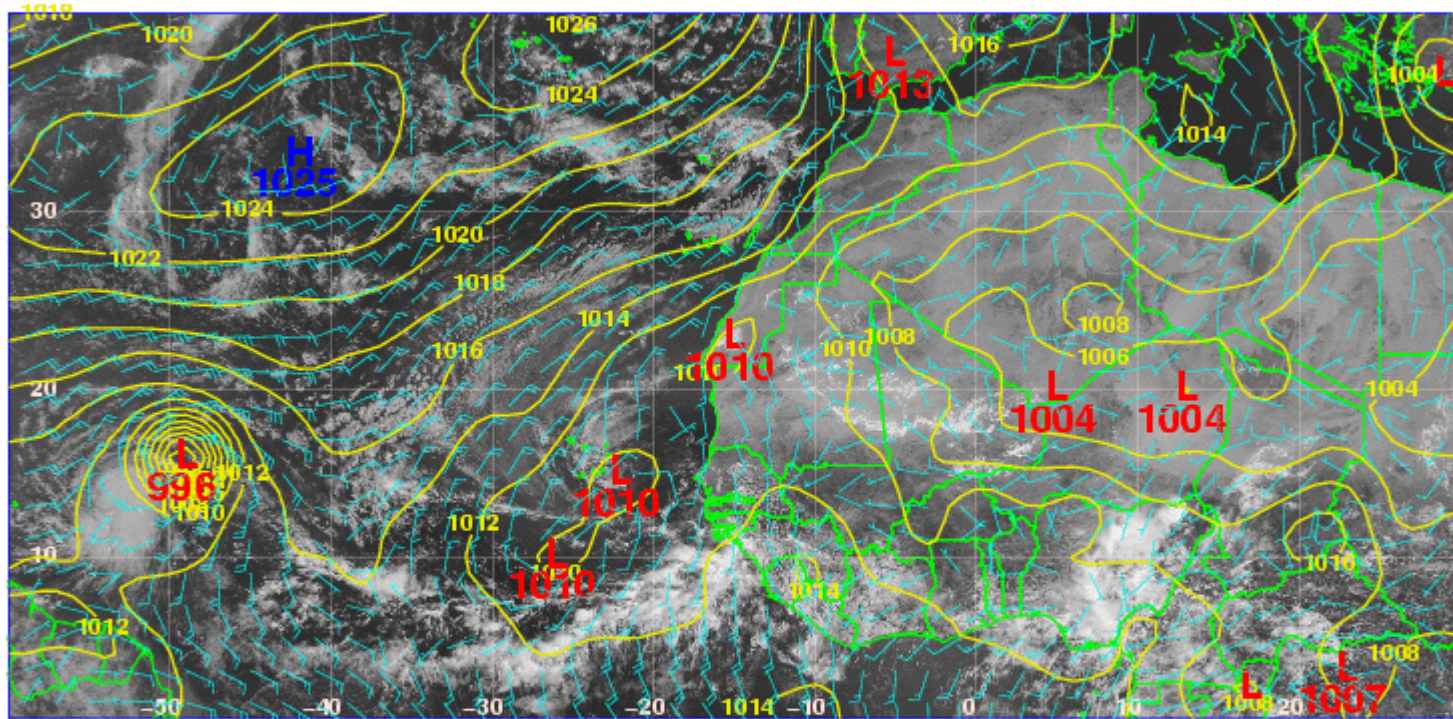






**How were the  
forecasts?**

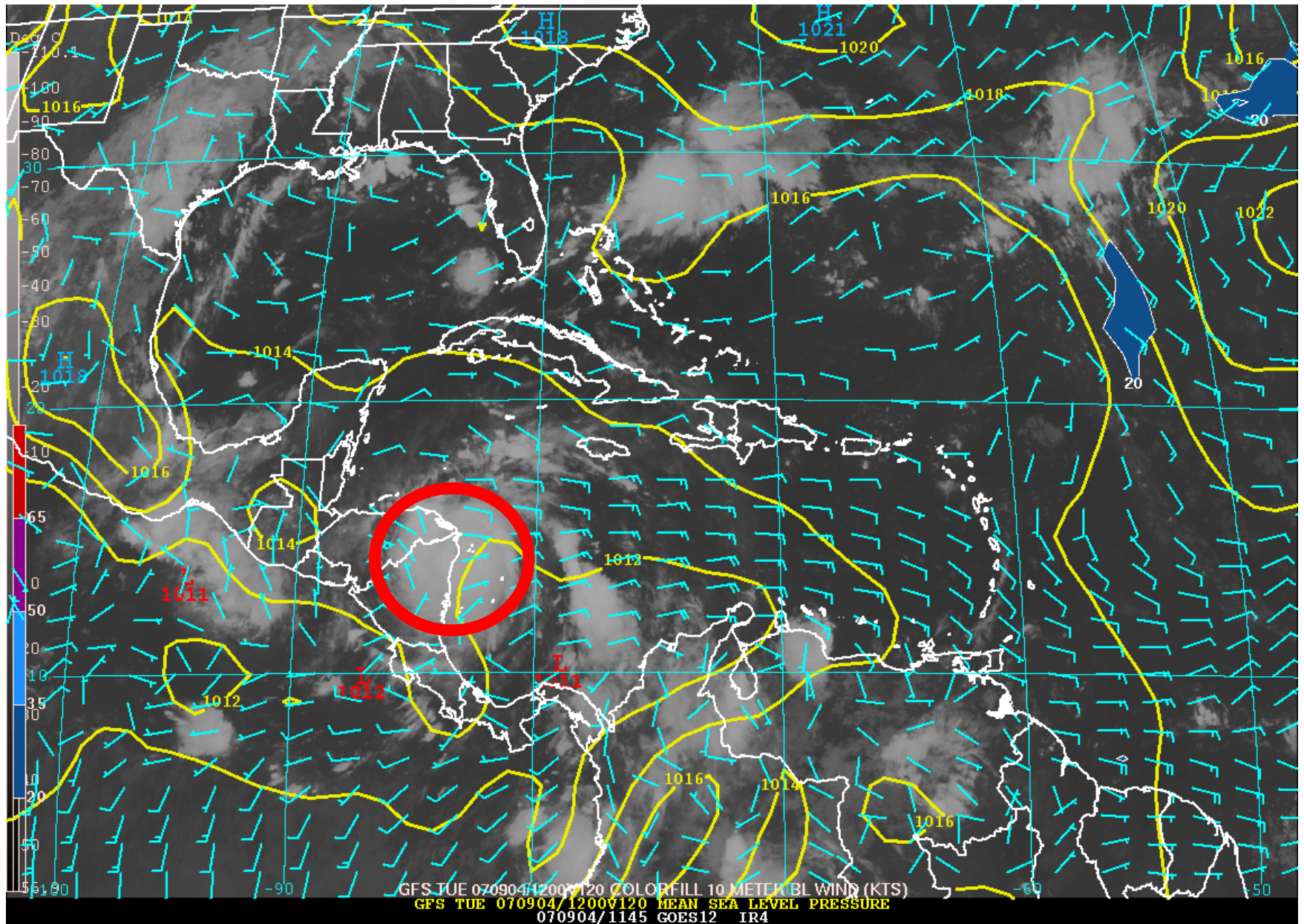
# Excellent 7 Day GFS Forecast on Hurricane Dean



GFS 070816/1200V168 PMSL AND BL WIND (KTS) FCST AND MET-9 070816 1200 UTC IMAGERY

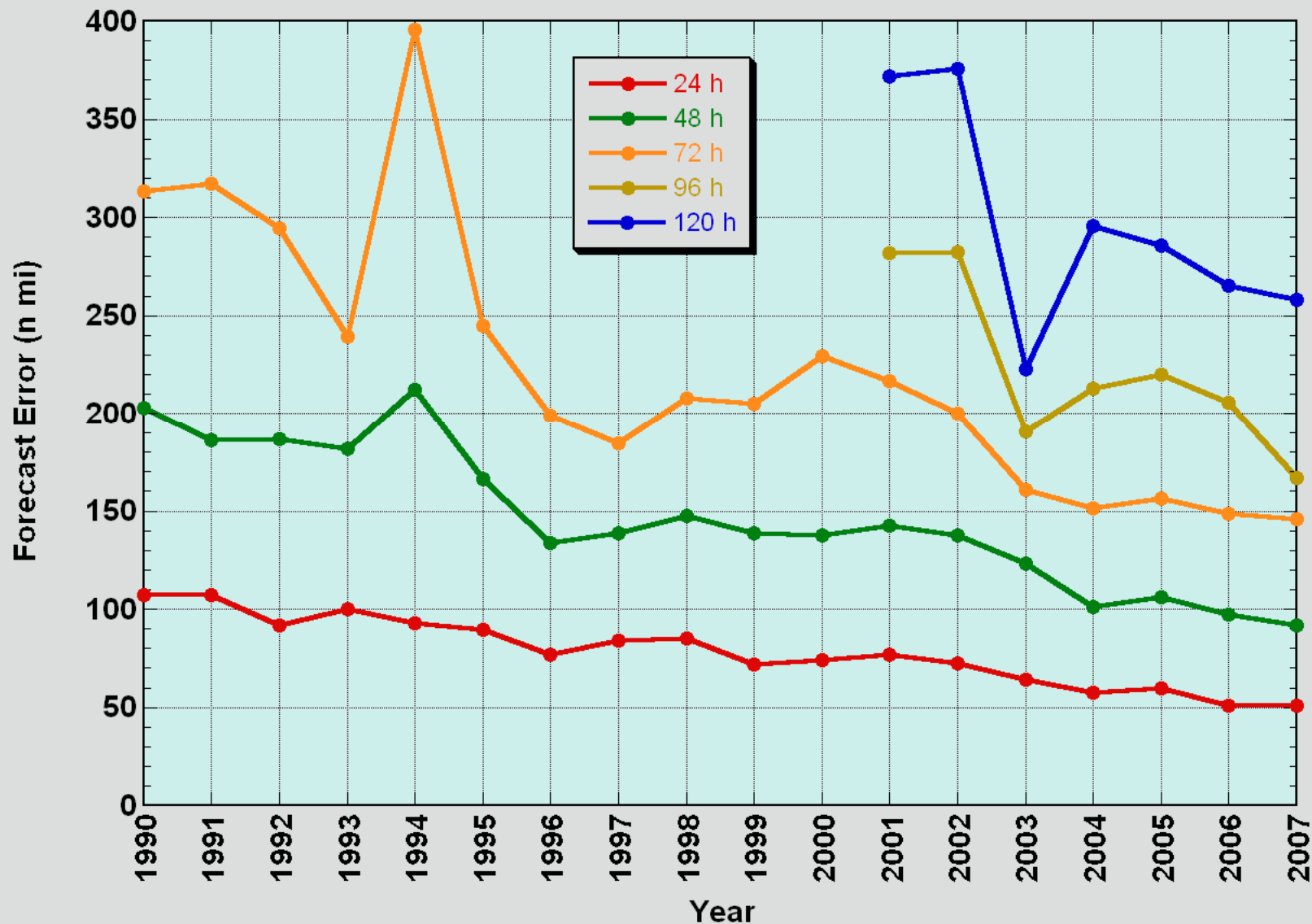


# Poor 5 Day GFS Forecast on Hurricane Felix



# Errors Continue Downward Trend - Cut in half since 1990

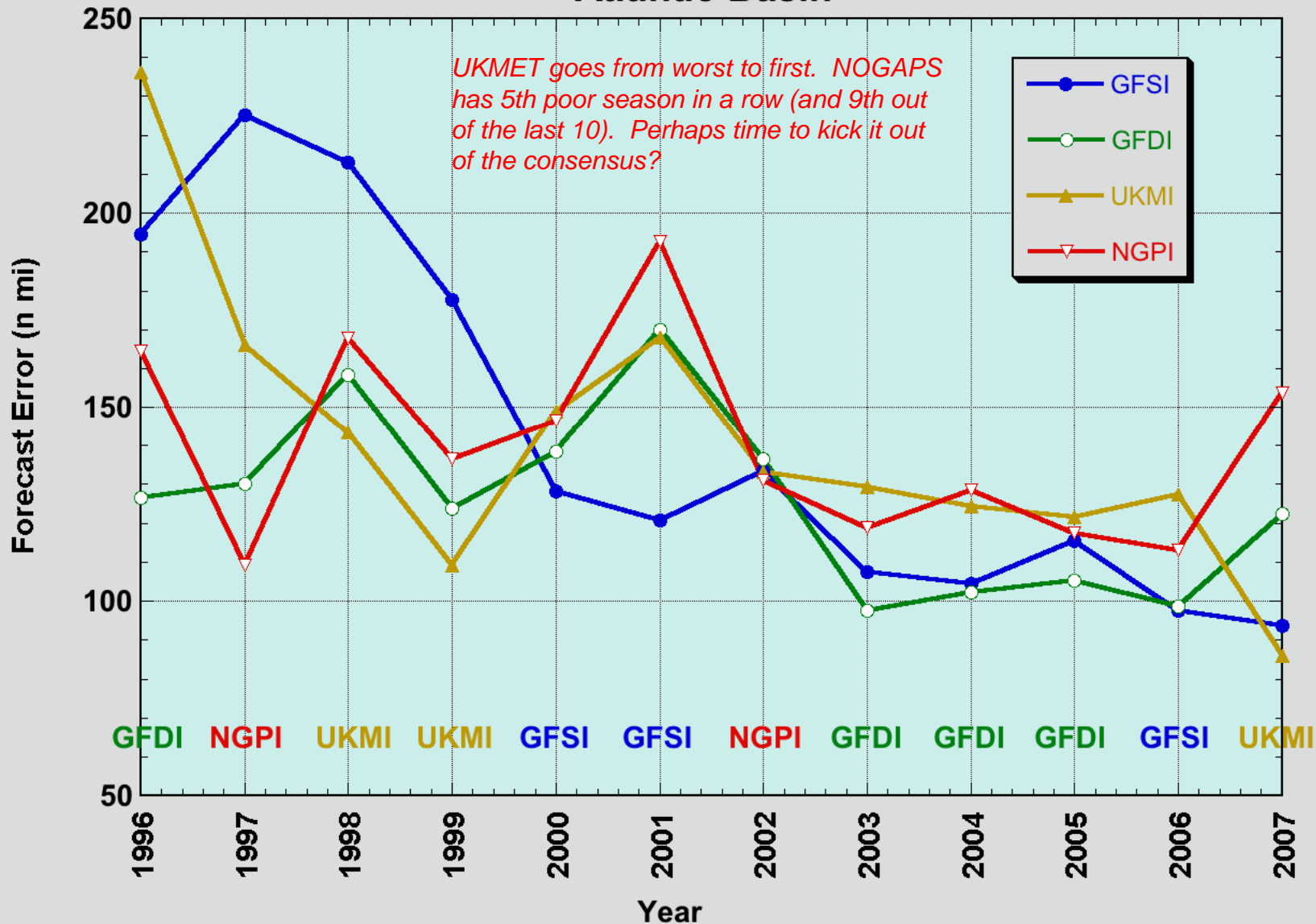
NHC Official Track Error Trend  
Atlantic Basin





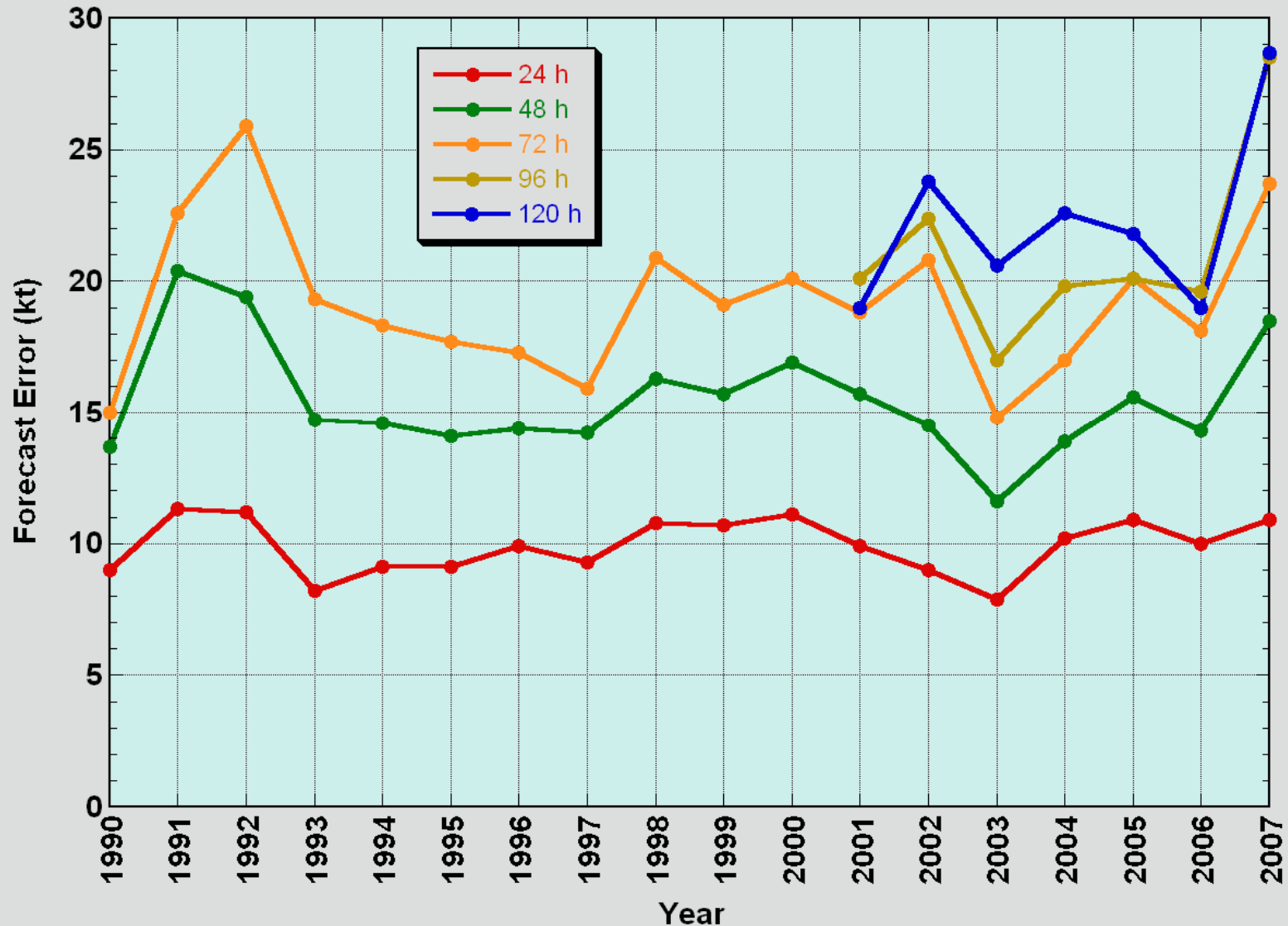
# Guidance Trends

## 48-h Track Forecast Guidance Trends Atlantic Basin



# No progress with intensity

NHC Official Intensity Error Trend  
Atlantic Basin





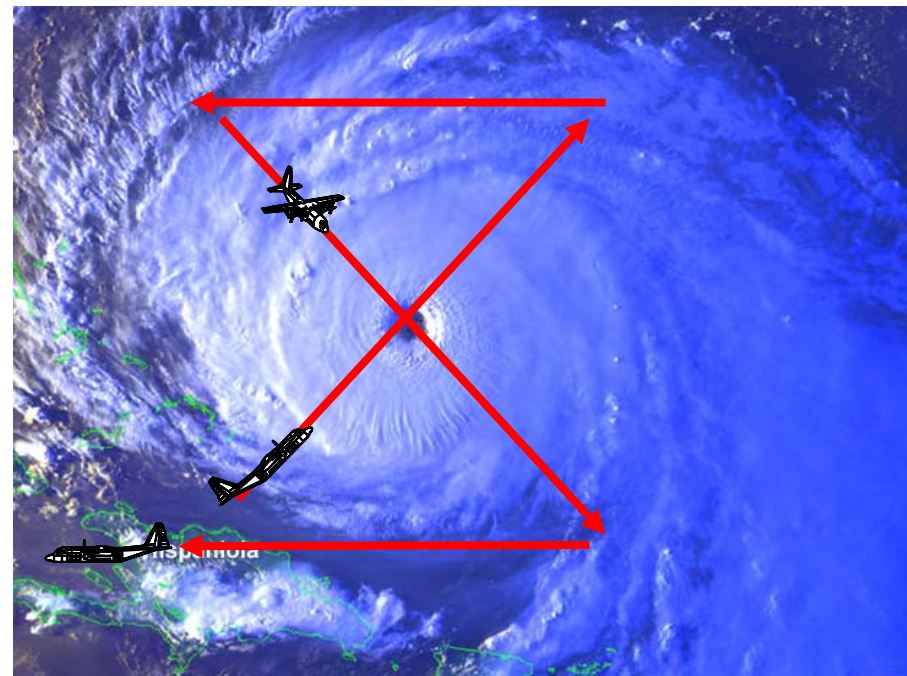
**NOAA P-3s**



**AIR FORCE WC-130**

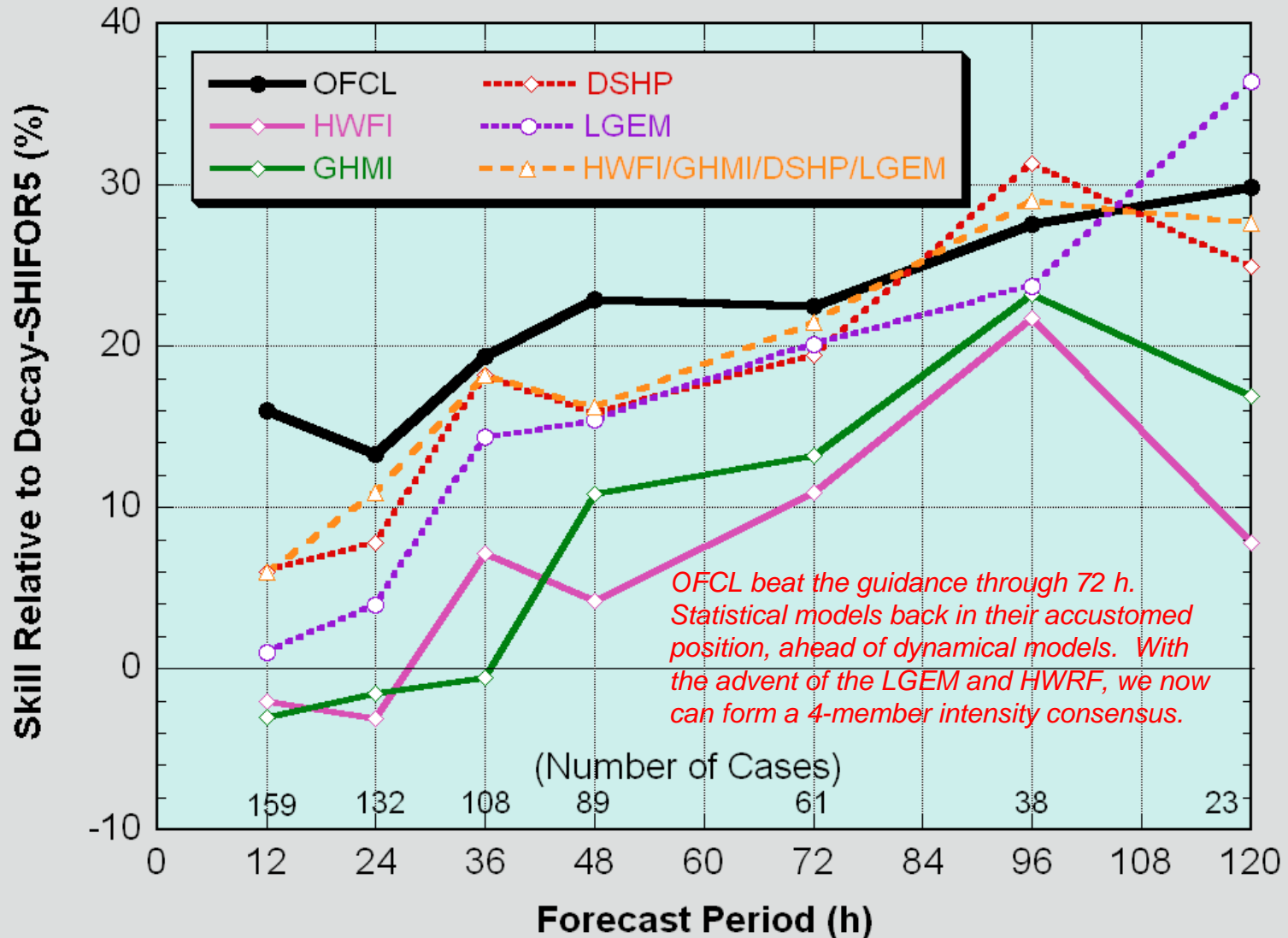


**SFMR**



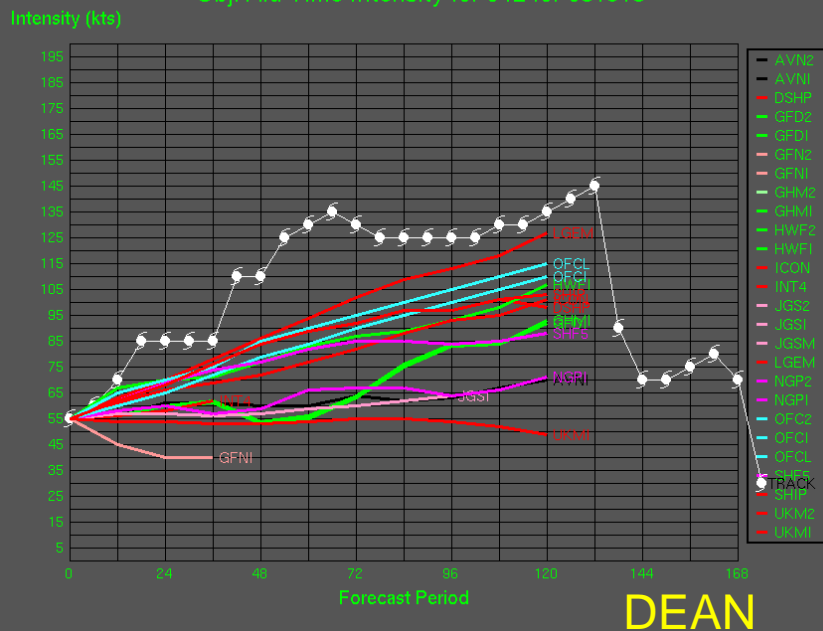
# Intensity Guidance

Intensity Forecast Skill (Early Models)  
2007 - Atlantic Basin

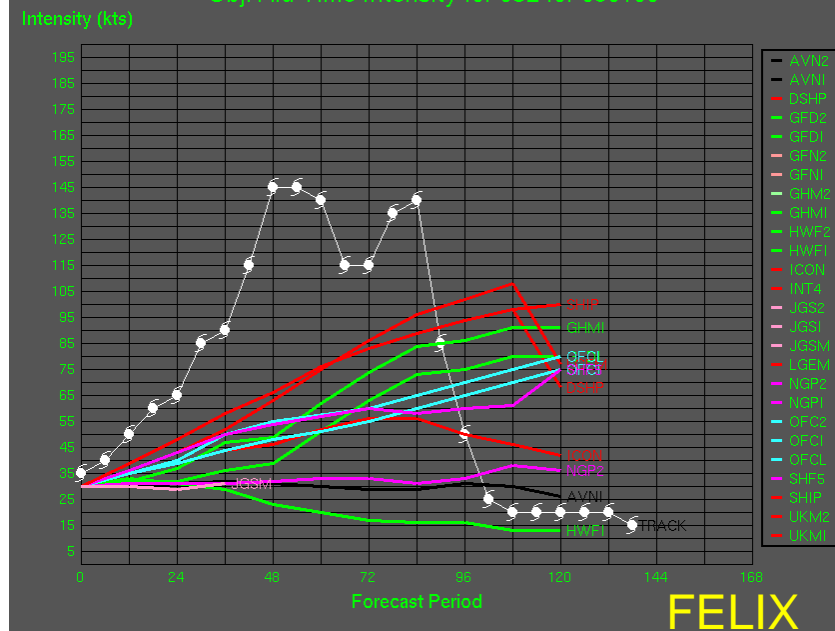




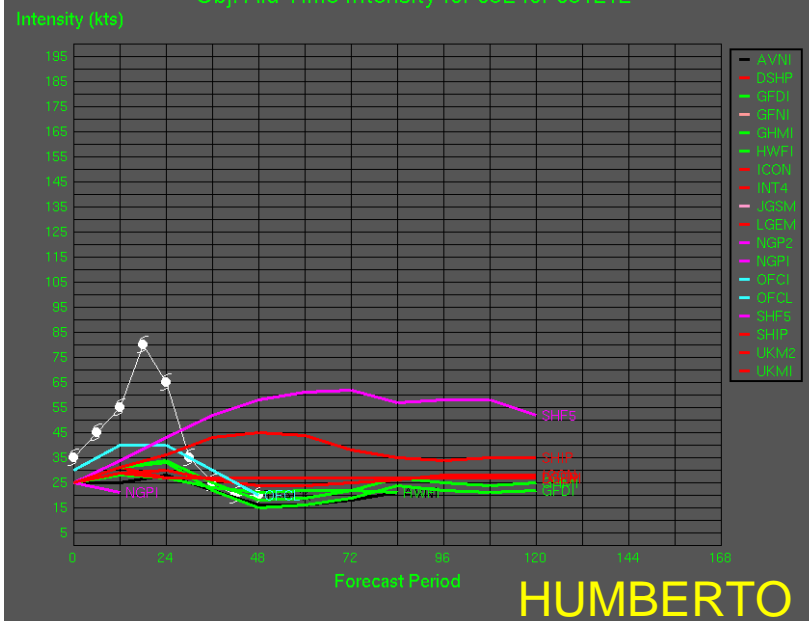
Obj. Aid Time Intensity for 04L for 081518



Obj. Aid Time Intensity for 06L for 090100



Obj. Aid Time Intensity for 09L for 091212



# NOAA's 2007 Atlantic Hurricane Outlooks

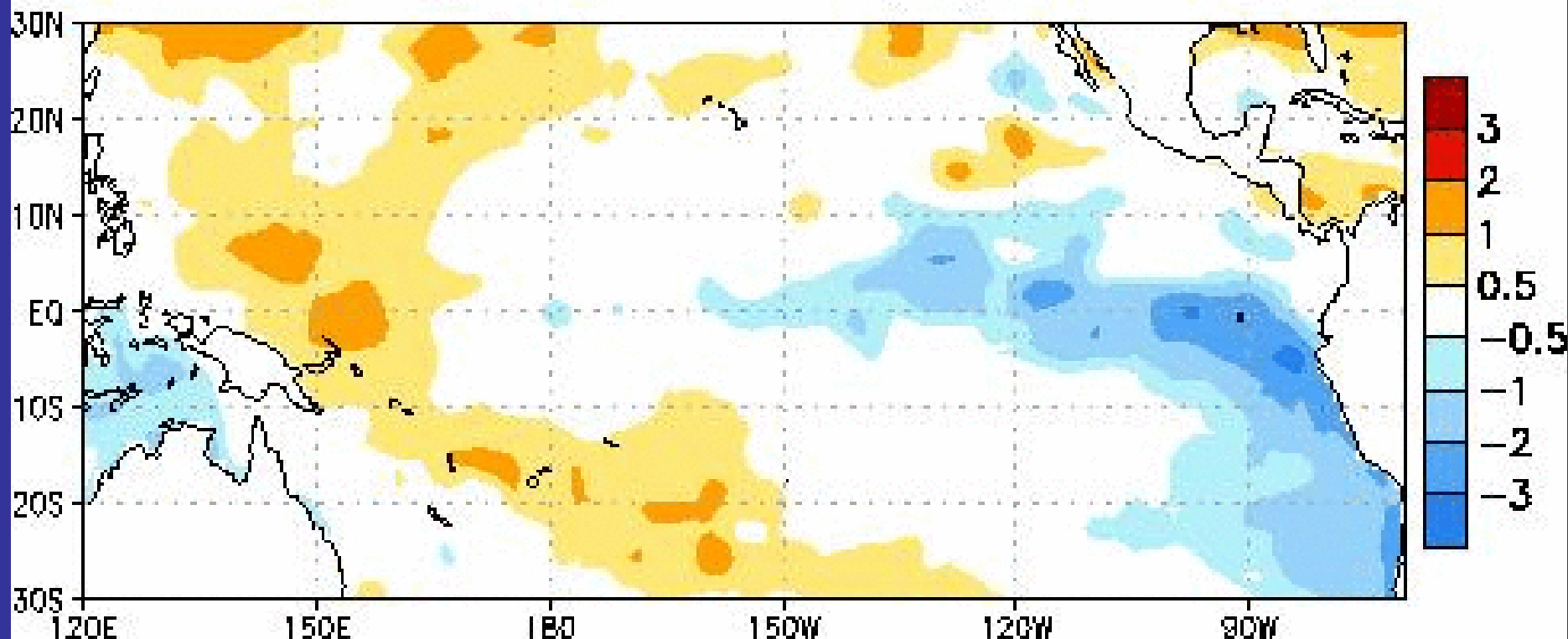
<u>Season and Activity Type</u>	<u>May 2007 Outlook</u>	<u>Aug 2007 Outlook</u>	<u>Observed Activity</u>	<u>Climatology</u>
Chance Above Normal	75%	85%	Near Normal	33%
Chance Near Normal	20%	10%		33%
Chance Below Normal	5%	5%		33%
Named Storms	13-17	13-16	15	11
Hurricanes	7-10	7-9	6	6
Major Hurricanes	3-5	3-5	2	2
ACE % of Median	125-210	140-200	~84	~100

See [www.nhc.noaa.gov](http://www.nhc.noaa.gov)



# La Niña cooling during much of 2007 season

Week centered on 29 AUG 2007  
SST Anomalies (°C)





**How do we change  
the outcome?**



# JHT Website

## [www.nhc.noaa.gov/jht/index.shtml](http://www.nhc.noaa.gov/jht/index.shtml)



- [JHT Home](#)
- [Terms of Reference \(PDF\)](#)
- [Staff](#)
- [Steering Committee](#)
- [Main Activities](#)
- [Highlights - 2001 to present](#)
- [New Projects \(2007-2009\)](#)
- [Current Projects \(2005-2007\)](#)
- [Past Projects](#)
- [Administrative Presentations and Information](#)

### **Mission Statement**

The mission of the Joint Hurricane Test Bed is to transfer more rapidly and smoothly new technology, research results, and observational advances of the [United States Weather Research Program \(USWRP\)](#), its sponsoring agencies, the academic community and other groups into improved tropical cyclone analysis and prediction at operational centers.

### **WHAT'S NEW**

#### **Updated May 8, 2006:**

[Please read about the new projects for 2007-2009](#)

#### **Updated November 21, 2006:**

[The JHT FY07 AFFO Application Deadline has been reopened.](#)

#### **Updated June 16, 2006:**

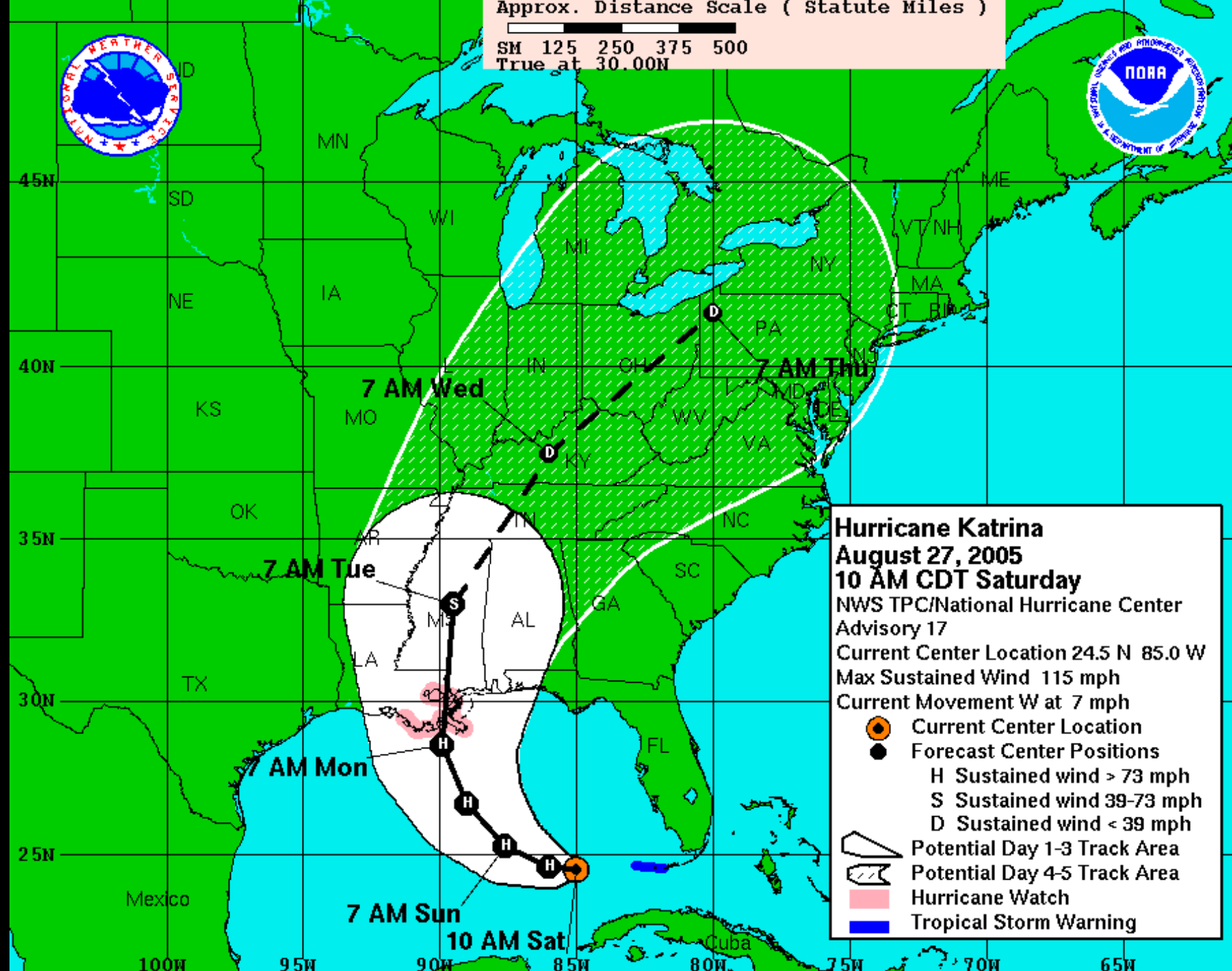
[The JHT FY07 Announcement of Federal Funding Opportunity has been released.](#)

#### **Added April 26, 2006:**

- [The 2005 First Year Reports are available in the Project Table](#)
- [Joint Hurricane Test Bed \(JHT\): 2006 IHC Update, Dr. Jiann-Gwo Jiing, JHT Director, Technical Support Branch Chief, TPC/NHC, Interdepartmental Hurricane Conference, 22 March 2006 presentation. \(PDF format\)](#)

Approx. Distance Scale ( Statute Miles )

SM 125 250 375 500  
True at 30.00N



# Hurricane Katrina

August 27, 2005

10 AM CDT Saturday

NWS TPC/National Hurricane Center  
Advisory 17

Current Center Location 24.5 N 85.0 W

Max Sustained Wind 115 mph

Current Movement W at 7 mph

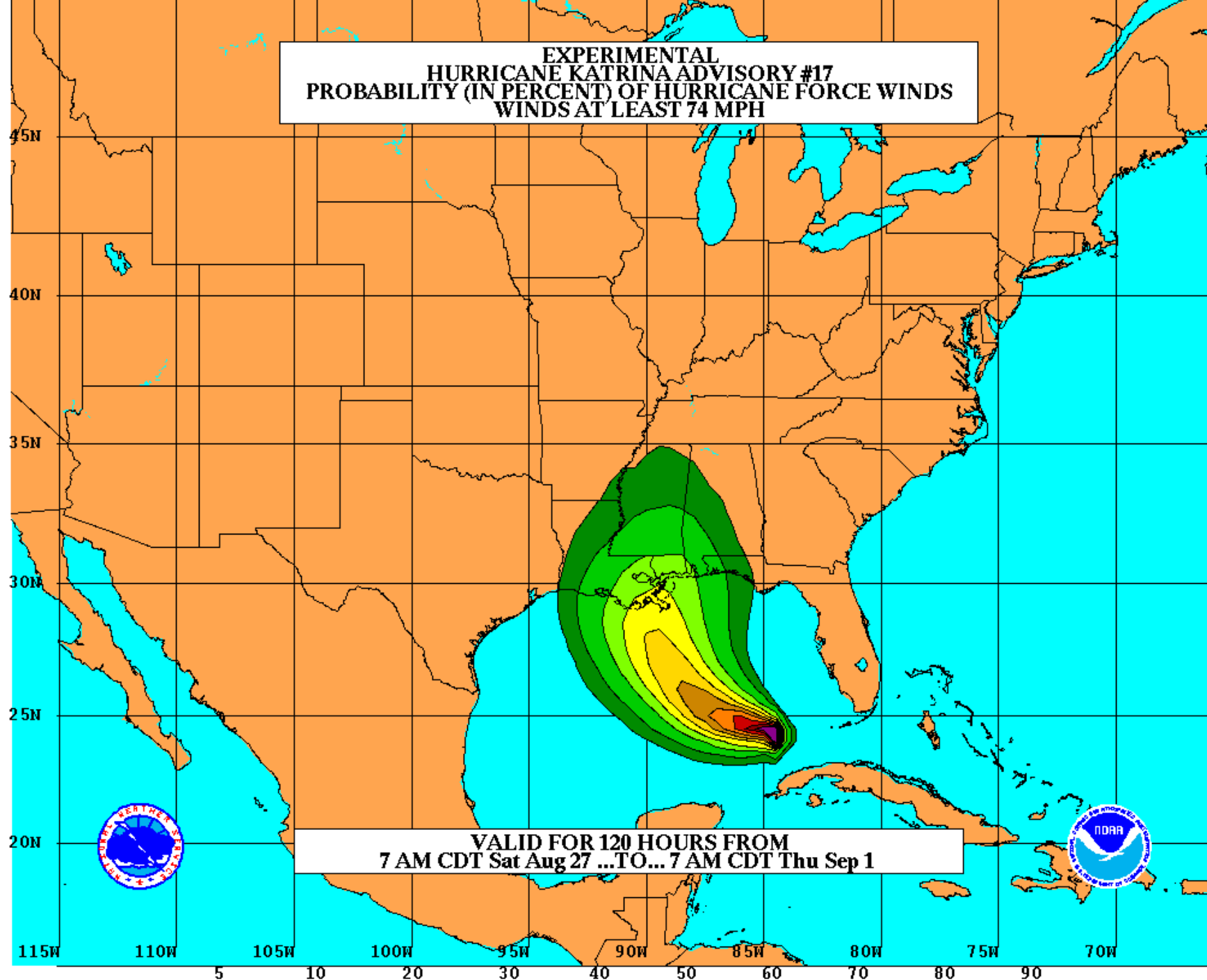
- Current Center Location
- Forecast Center Positions
  - H Sustained wind > 73 mph
  - S Sustained wind 39-73 mph
  - D Sustained wind < 39 mph

- ▨ Potential Day 1-3 Track Area
- ▨ Potential Day 4-5 Track Area

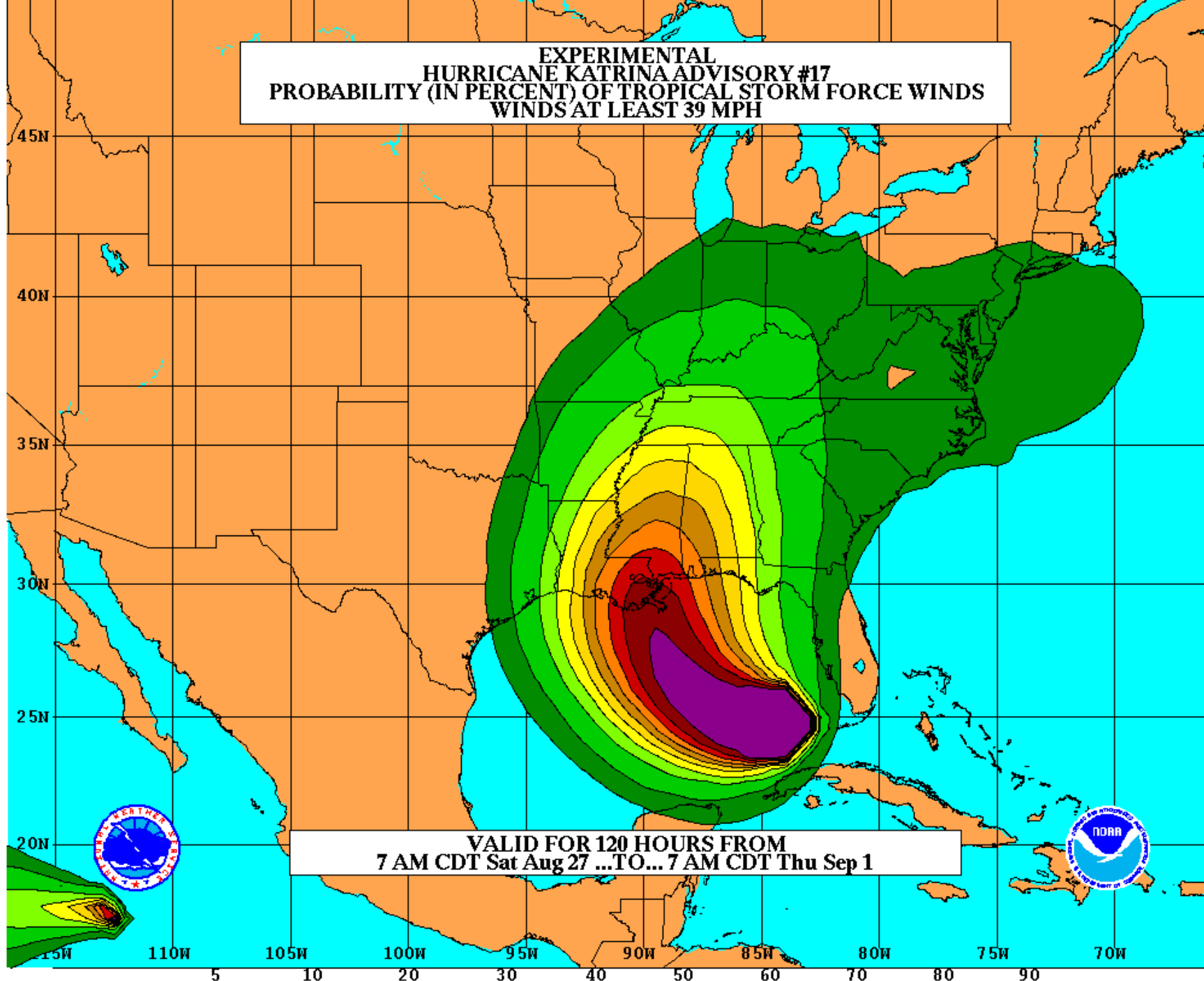
- ▨ Hurricane Watch
- ▨ Tropical Storm Warning



**EXPERIMENTAL  
HURRICANE KATRINA ADVISORY #17  
PROBABILITY (IN PERCENT) OF HURRICANE FORCE WINDS  
WINDS AT LEAST 74 MPH**





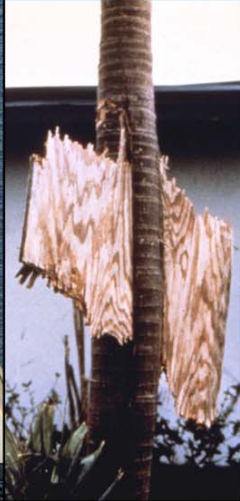




**EXPERIMENTAL  
HURRICANE KATRINA ADVISORY #17  
PROBABILITY (IN PERCENT) OF TROPICAL STORM FORCE WINDS  
WINDS AT LEAST 39 MPH**





# National Hurricane Preparedness Week

May 25-31, 2008

HISTORY	HURRICANE HAZARDS			FORECAST	PREPARE	ACT
						
S	M	T	W	Th	F	S
MAY 25	MAY 26	MAY 27	MAY 28	MAY 29	MAY 30	MAY 31
<b>Hurricane Basics</b>	<b>Storm Surge</b>	<b>High Winds</b>	<b>Inland Flooding</b>	<b>Forecast Process</b>	<b>Disaster Prevention</b>	<b>National Day of Family Preparedness</b>
<b>Hurricane History</b>	<b>Marine Safety</b>	<b>Tornadoes</b>				

[www.hurricanes.gov/prepare](http://www.hurricanes.gov/prepare)

**(((COMING SOON)))**

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NETWORK SOLUTION**



**COORDINATED COMMUNICATION**

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NETWORK**







# A Tale of Two Houses



Courtesy of Federal Alliance  
for Safe Homes –  
FLASH, Inc.



# National Transportation Safety Board

*An independent U.S. Federal Government agency*

## NTSB Launches Team to Colorado Plane Crash

The National Transportation Safety Board launched a Go-team to the February 16th crash of a business jet near Pueblo, Colorado. Eight people were killed when the Cessna Citation 560, owned by electronics retailer Circuit City, crashed while on approach to the Pueblo Memorial Airport. The jet was enroute from Richmond, Virginia to Santa Ana, California, and had planned a refueling stop in Pueblo.

The NTSB's Frank Hilldrup is the Investigator-in-Charge and will be leading the team of 10 during the investigation. Other team members include investigators in operations, survival



Investigators at the scene of the Cessna Citation business jet crash outside of Pueblo, CO.

factors, weather and engineering

structures, as well as representatives from Public Affairs and the Office of Transportation Disaster Assistance. Chairman Engleman Connors acted as the spokesman during the on-scene portion of the investigation.

The cockpit voice recorder from the accident airplane, as well as another from a similar aircraft that landed in Pueblo shortly after the crash, have been flown back to the NTSB's Washington, DC Headquarters for analysis.



Chairman Engleman Connors (*left*) studies wreckage from a Colorado plane crash, with the NTSB's Brian Fiffick and Lauren Peduzzi.

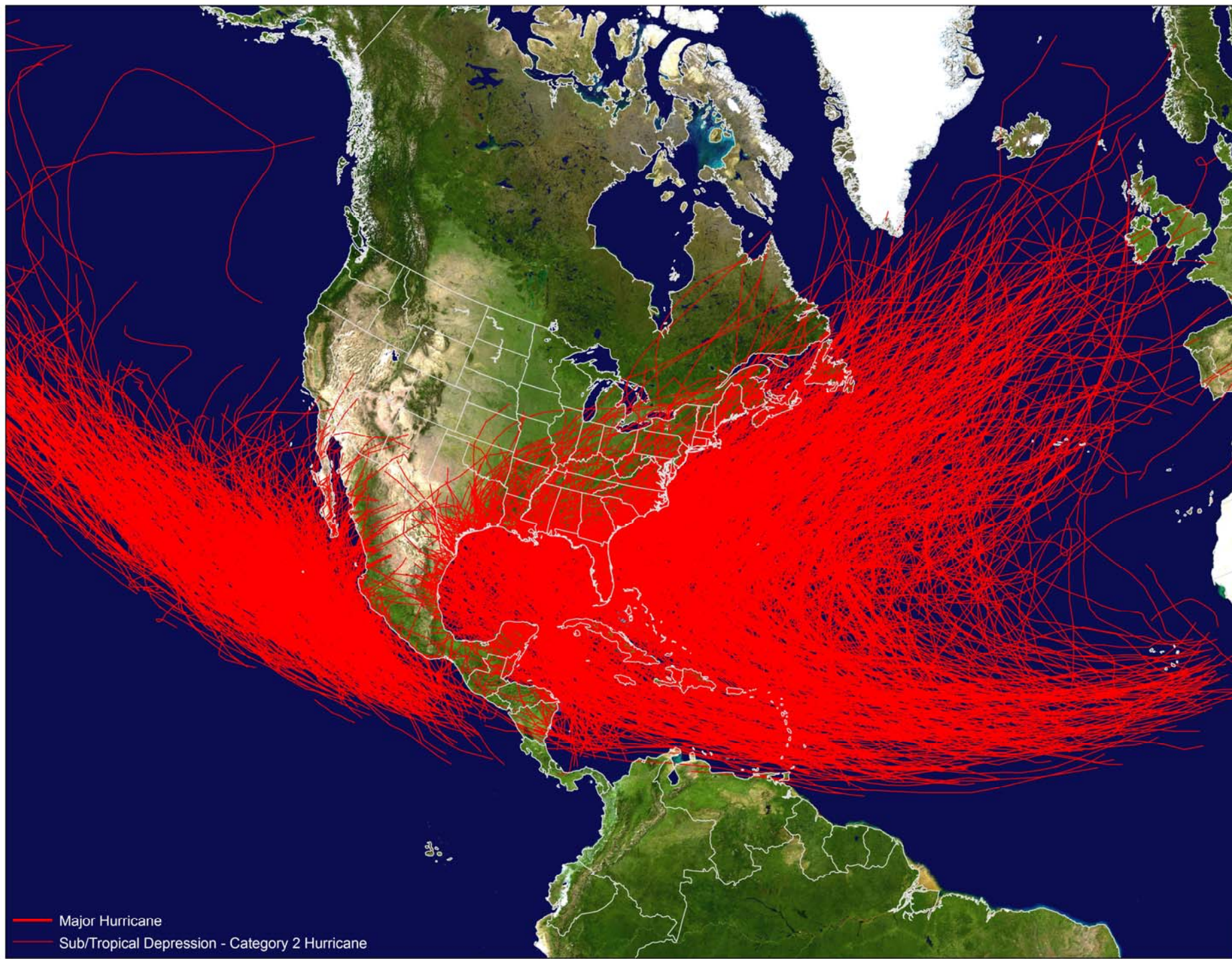


# NATIONAL DISASTER REVIEW BOARD NDRB ?????



Marty Bahamonde/FEMA

A photo taken by a federal emergency official the day Hurricane Katrina arrived showed the broken 17th Street Canal levee in New Orleans.





A satellite image of a hurricane over the ocean. The hurricane is a large, circular storm system with a dark, dense eye in the center, surrounded by a thick, swirling ring of white clouds. The surrounding ocean is a deep blue, and the sky above the clouds is a lighter blue. The image is taken from a high altitude, looking down at the storm.

**THANKS**

**QUESTIONS ?**